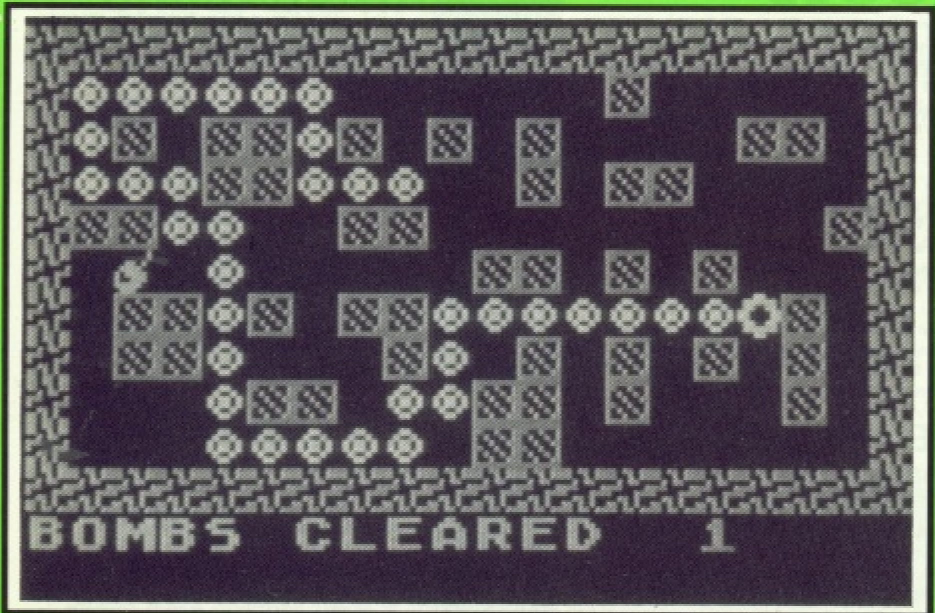
Page 6 Publishing's

NEW ATARI USER

The Resource for the ATARI CLASSIC and the ATARI ST

Issue 59 December/January £2.50



FOR THE ATARI CLASSIC

BRAND NEW SOFTWARE *reviewed!*

BANK SWITCHING *- use that extra 130XE RAM*

NUMBER SORTING *routines*

SCOTLAND'S DISK MAGS *reviewed*

SUPERSCRIPT *- still available but still the best?*

SNAKEY

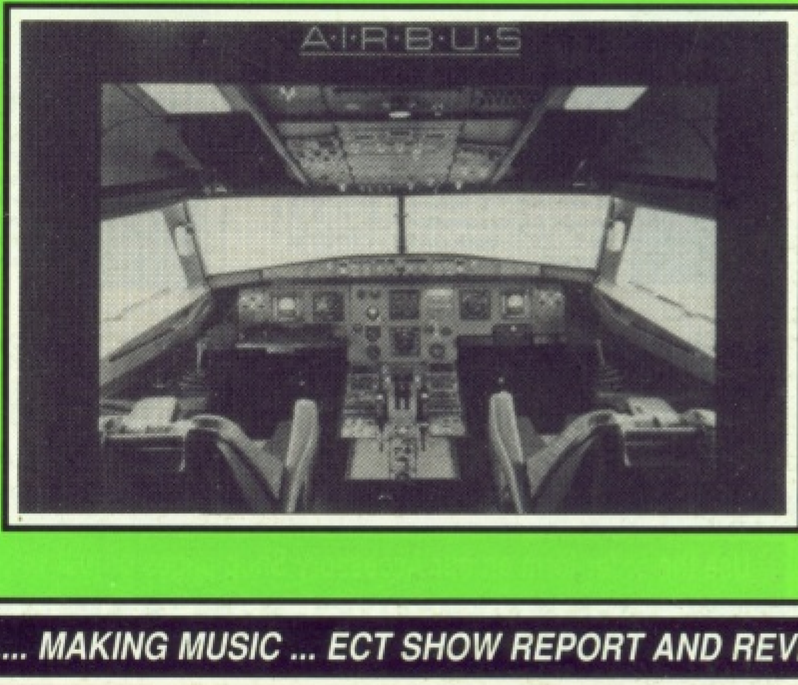
A neat little type-in game

FOR THE ATARI ST

A320 AIRBUS *- at last you can fly without fighting!*

THE BLITTER TRUTH *- is it worth fitting a blitter?*

ELVIRA 2 *- At last, but worth the wait?*



PLUS ... STOS COLUMN ... EDUCATION IN THE PD COLUMN .... MAKING MUSIC ... ECT SHOW REPORT AND REVIEWS

CASSETTE BARGAINS FROM PAGE 6!

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TRANSMUTER

A new kind of weapon. This sci-fi arcade game features excellent smooth scrolling, incredible terrain, vector graphics sections and subterranean caverns. Fast reactions and a cool nerve are a necessity. Music by David Whittaker



KIKSTART

The ultimate off-road motorbike scramble simulator. Guide your rider carefully over the obstacles in this all action simulator for 1 player against the computer or 2 players against each other as well as the clock



180

What can we say? A great darts challenge. Eight opponents, digitised speech, two player option. live joystick control, full matchplay scoring, a sense of humour, superb playability, this one has it all!



SIDEWINDER II

It is 27 years since the final battle of the war with the aliens. 27 years of peace have reigned in the Western Spiral Arm of the Galaxy. All this is about to change. Step aboard your craft and prepare to defend mankind in this all action space blast



GHOSTBUSTERS

Has anybody seen a ghost? Matter of fact yes they have! At this very moment hundreds of ghosts are making their way to the infamous spook central. Only you can save the world from a disaster of biblical proportions. So go and show 'em how you do it!



NINJA

Blasts the belt off all other martial arts games! That's all it says on the inlay! Someone sure reckons this is the best punching, kicking, ducking and diving game around



ROCKFORD

The only true arcade version of the classic game Boulderdash. There are four levels on each of five different worlds with four screens on each level. It all adds up to eighty totally different playing screens.
INCLUDES FREE GAME - CRYSTAL RAIDER



PROTECTOR

Assigned to Fort Rucker, the US Army Helicopter Training School based in the Nevada desert, your aim is to become the best chopper pilot this side of the Iron curtain. A real Protector! Your mission consists of a strategic battle of wits between yourself and either another pilot or a computer controlled RPV (Remote Pilotless Vehicle)



ROGUE

You are the ROGUE. Your mission is to search the Dungeons of Doom for the Amulet of Yendor. In the dungeons you will find many things to aid the quest for the Amulet. You will also encounter fearsome monsters and fiendish traps that will challenge all your skills



UNIVERSAL HERO

Only seven seconds left to save the planet! Universal Hero has to save his skin and everybody else's by finding bits to repair a shuttle to get to a planet to pick up the spares to mend a space freighter which is out of control and about to blow him and his chances of getting back to earth to atoms. A nail biting, multi-dimensional, hi-res Arcade Adventure!



HENRY'S HOUSE

Little Henry has shrunk. He must navigate his way through the royal household to find the cure. Avoiding all the obstacles in his path, from terrible toothbrushes, through pestiferous parrots and chefs chasing chickens, to a final encounter with the vicious vampire! Acknowledged by all reviewers as one of the best Atari games



BOMB FUSION

A terrorist gang has planted bombs throughout the Sellerscale Nuclear Processing Plant and you, as ex super hero (ex after the 'Boris Affair') have to go in and save the plant and possibly the Northern Hemisphere from destruction



MILK RACE

Cycling 1,000 miles is no mean feat - and you could end up feeling pretty exhausted by the time you've finished playing this superb race simulation designed especially in conjunction with the Milk Race



GUN LAW

Four months of bloody alien attacks have taken their toll - all the surviving inhabitants have fled and arson attacks have been made on your weapon stores, they destroyed what you could not carry away. You are left to fight alone against ruthless and bloodthirsty killers with just a single machine gun



REVENGE II

The Mutated 90 foot high, laser spitting death camels have rebelled against their captors the Zzyaxians and are out for revenge! All action, highly graphical shoot-em-up from Jeff Minter



DESPATCH RIDER

Join the growing band of street demons - those fearless horders who terrify the population of the big cities to get the parcels through. Plan your moves to make some money, but don't take too long - time is always short. Gain an instant macho rating and be a despatch rider with this all action simulation



INVASION

Mobilize your units and prepare for battle. This all action space conflict requires skill, strategy and tactics. You must destroy the weather control station in order to win the battle but every move you make the enemy will counter, and they're waiting for you to make just one fatal slip up



LOS ANGELES SWAT

Special Assignment. Rescue the hostages from the terrorist gangs holding out in West L.A. Clean up the streets. Blow away the bad guys and be a hero on network T.V.! Fail and you won't be coming back to watch it. All action joystick bending combat for those with the skill to survive!



SPEED ZONE

Enter the Speedzone in a frantic defence against marauding alien forces. A survey ship sent into the area comes under attack. As an enemy vessel draws closer your "STARFIRE" class attack craft is launched



FEUD

To win at Feud you must "out-spell" your rival Wizard Leanoric. In Kieke's herb garden you will find the ingredients for your spells but tread carefully as strange things can happen in this game of magic and mystery



PANTHER

Save the last humans on Xenon before the alien hordes turn them into Sunday roast! Take your ground attack ship through this 3D scrolling mega shoot-em-up with great graphics and unbelievable soundtrack

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'The magazine for the Dedicated Atari User'



Happy Christmas Folks!

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NEW ATARI USER ON DISK

A disk containing all of the 8-bit programs from each issue of NEW ATARI USER is available either separately or on subcription. Single price £2.95 per disk, Subscription rates (6 issues)

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SUBMISSIONS

PAGE 6 welcomes and encourages its readers to submit, articles, programs and reviews for publication. Programs must be submitted on disk or cassette, articles should wherever possible be submitted as text files on disk. We seek to encourage your participation and do not have strict rules for submissions. If something interests you, write a program or article and submit it! Appropriate payment will be made for all published programs and articles, all payments being made at the end of the second month shown on the cover of the issue concerned.

The next issue of NEW ATARI USER will be on sale 28th January
Editorial copy date is 14th December

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PAGE 6 PUBLISHING's NEW ATARI USER

Issue 59
December/January 1992/3

'The Magazine for the Dedicated Atari User'

ISSN No. 0958-7705

THE CREDITS

All of the usual stuff is on page 3 but here are the people who made this issue possible.

Les Ellingham hates computers as will be clear from the editorial opposite and consequently lacks the inspiration for any witty comments this issue!

Sandy carries on as usual and keeps cheerful despite it all

Paulette carries on as usual and has a new boyfriend ... hold on ... another new boyfriend ... just a minute ....

The Regular Contributors, who provide the backbone of the magazine and can generally be relied upon to come up with good articles and reviews, are ....

John S Davison · **John Davison jr**
John Sweeney · **Paul Rixon**
Damon Howarth · **Ian Finlayson**
Dion Guy · **The Tipster**

All other contributors for this issue are individually credited alongside their articles or programs. Thanks to everybody for sharing their enthusiasm with other Atari users.

Many, many thanks to Ann O'Driscoll for sending a tape of Irish music and for her kind comments. They are much appreciated.

And so on to the music which, because of the recession, is limited this issue to just two new CD's. Firstly Tubular Bells II which I would never have bought had it not been shown on the TV. I was surprisingly impressed and the CD has been played almost constantly since. Next big surprise is Eric Clapton with Unplugged which is eminently listenable. Funny that, since I don't particularly like Eric Clapton or the blues but I heard a bit on the radio and was intrigued. Sometimes it all clicks and this is one of those times, a bit like being at Cambridge late at night when it is warm and cosy. Lastly, yet again, John Prine's Missing Years which has been played constantly in the car and at most other times. With times hard all round I would like to have had much more but at least this year I have a long Christmas list with new, or reissue, CD's by Suzanne Vega, June Tabor, Martin Carthy, Dr. Strangely Strange, The Albion Band (Rise Up Like The Sun), Vangelis, Bob Dylan, Loudon Wainwright, 10,000 Maniacs, Roy Harper, Joan Baez, Robin Williamson, Incredible String Band, Chris Rea, Neil Young and Enya all included! Maybe Santa will be kind to a music starved publisher!

No competition this time for a couple of reasons. Firstly only the same two or three people keep entering and are obviously trying to build up a decent collection! Secondly it upsets me to give away CD's when I can't have them!! Last issue's winner was Phil Johnson who just pipped Scotland's K. Anderson to the post with the only other entry.

The next issue of NEW ATARI USER could feature YOUR article or program, so SEND IT IN NOW!

PAGE 6 shows just what you can do with your Atari. NEW ATARI USER has always been created entirely with Atari equipment, initially on the XL but more lately with a Mega ST and other stuff, who needs PC's or Macs! With the exception of the final output on a Linotron and the use of an in-house repro camera for the photos and listings everything is done on the ST. Hardware includes a Mega ST2 (upgraded to 4Mb), SM125 Monitor, Supra 30Mb Hard Disk, an Atari Laser Printer, Citizen 124D printer, Philips CM8833 monitor, 130XE, XF551 disk drive, 810 disk drive, 850 interface, NEC 8023 printer. Principal software used is Protext and Fleet Street Publisher 3.0. Other software includes Kermit, TariTalk, Turbo Basic and various custom written programs on the XL/XE. Articles and programs submitted on XL/XE disks are subjected to various custom written programs before being transferred across to the ST via TARITALK. All major editing is done with Protext and pages are laid out with Fleet Street Publisher. A disk with the finished pages as Postscript files is sent to a typesetting bureau to be output on a Linotron and, hey presto, finished pages are sent back exactly as you see them. It really does work! All that is left is to drop in the listings and photos.

Well, it's not quite as easy as that but you get the idea!

Editorial

What a nightmare! There is no denying that computers have made life a lot easier and made things possible that years ago we could only have been dreamed of. Without a computer it would not be possible to create this magazine but having a computer guarantees nothing!

This issue may reach you a few days late and a few of the things which should have been included are missing. Likewise there are one or two things which weren't going to be here included to fill gaps. Why? Well, I had completed almost ninety per cent of the typesetting when the directory of the hard drive got screwed up (actually displaced by just one byte) and the end result was that I lost the entire typesetting. Two weeks work gone in around ten seconds! Boy do I hate computers. Not only that but at almost the same time the laser printer died and I have not been able to proof the copy fully so there nay be even more mistakes than usual. Sorry about that but don't blame me it's the equipment that is malevolent!

For those who like the juicy details all I did was to load up one of the last articles for editing and resave it. Suddenly only that file appeared in the directory. Panic sets in almost immediately in these cases. I got out the sector editor to see what was wrong and discovered that the directory in the particular folder had been displaced by one byte but I could not figure out how to put it right. First thing I thought of was to back up all the work I had done so far and so the entire issue was backed up onto floppies before I set about trying to sort the directory. I managed to get one filename back but the details were not correct so I gave up and attempted to back up the entire drive partition to start afresh. Because this filename was not correct the back up program bombed out and it seemed the only thing to do was to delete the file. I picked it up and dropped it in the trash can and when the drive did not stop after a few seconds I broke out in a cold sweat. There was nothing I could do but pray. The drive stopped after several seconds and lo and behold everything was gone, about 2 megabytes of space, including all the directories had been wiped clean! Holding back the tears I consoled myself with the thought that at least I had the current issue on floppies and so started to try and copy it back only to find that the directory on the floppies had been scrambled too. That was it two weeks solid work down the drain. Time for a bottle or two of wine and a long lie down. Boy I really do hate computers.

So this issue has been recreated from scratch. What made it worse was that I lost all of the last issue as well so things like repeat adverts and several other items, including about twenty 'spare' pages left over from last time, also had to be redone. It has taken lots of blood, sweat and tears to get this far!

And what about the laser? Well that is another entire story of its own. All I will say is that I can only hope that Atari will get it back to me before the next issue is due!

A NEW STYLE

You can't have failed to notice the different cover this issue but as they say you can't judge a book by its cover. Inside you will find much as before (malevolent computers permitting) and with your help and contributions and some economies we can keep New Atari User going for a long, long time. Of course we would have liked to have continued with a nice full colour cover but, now that we are not in the main newsagents, it is not actually necessary and it was one of the major production costs. We have had several letters in recent months suggesting we drop the colour cover in these hard times and so maybe it doesn't matter too much. What does matter is that we can continue to support the Atari as we have always done. Long term readers will remember that this is what the mag looked like in the early days so the circle has turned but the wheels keep on rolling.

OUT OF SPACE!

Nearly running out of room now so I will finish up with a couple of brief comments.

CONTRIBUTIONS: We need your voluntary contributions to keep the magazine interesting. Share whatever you have with your fellow Atari enthusiasts.

SUBSCRIPTIONS: Now our lifeblood so please tell all of your Atari owning friends that the future support of the Atari in this country depends on them supporting us.

Les Ellingham

MICRO DISCOUNT

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NEW SOFTWARE FOR XMAS

As I mentioned in the Dusseldorf report in Oct/November Issue 58 NEW SOFTWARE FOR YOUR ATARI 8-BIT!!! Two new games this month and more to follow

THE LAST GUARDIAN: A multi level vertical scrolling shoot 'em up. Fly over the alien warship, destroying as many aliens and ground installations as possible. If you survive 5 bombing runs and the dreaded asteroids you have the chance to land back at your mother ship. Great graphics and sounds

TAGALON: Single or simultaneous two player search game. Find and avoid the baddies. You start in the village of TAGALON, your mission is to collect the hidden marbles and go to the room with the magic purple bed, deep in the depths of the castle. Sounds simple but on your quest you will find that both the baddies and player 2 can create a few problems.

Both of these new games will be available in the following three formats: DISK £5.95 each: DUAL FORMAT TURBO HIGH SPEED AND STANDARD TAPE £4.95 each

NEW MULTI-BUYS: Due to a massive purchase of bankrupt stock I can now put together multipacks of software for tape or cartridge users and you can save up to 40% plus (Just right for Christmas so order early)

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EXCEL BACK ISSUES are available priced £2.50 each. Buy any 5 for £10, or take every issue (1 - 20) for only £35!

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MULTI-SPRI

The Atari's hardware sprite (or player/missile graphics for purists!) system is one of the machine's best features. You can create small sprited with their own width, colour, horizontal position, and vertical position by using the SPRITE MOVER program from New Atari User issue 51 but the main drawback is that only four are available at one time, although the 'missiles' can be used as a fifth sprite.

The program presented here expands upon SPRITE MOVER by adding a Display List Interrupt routine which re-positions the four sprites when the TV picture is half-drawn, the practical upshot of which is that you can now use four sprites in the top half of the screen and another four in the lower half. The DLI also changes the colours of the sprites, so you can have eight different coloured sprites on screen at a time, or nine if you use the missiles!

The program uses X and Y co-ordinates for each sprite in a similar way to SPRITE MOVER, but here you have to be more careful when positioning them, as only one half of the screen is available for each set of four sprites. The co-ordinates range from 0-255 (horizontal) and 0-80 (vertical) for the first eight sprites, but the missiles or fifth sprite, is not split half way down the screen. The reason for this is that if you want to use one sprite for your man or spaceship or whatever, you will probably not want to limit him to only the top or the bottom half of the screen, so the vertical co-ordinates for this sprite (number 9 in the program) range from 0-178. The table below shows the memory locations to use for positioning the sprites.

SPRITE	X-reg.	Y-reg.	COLOR reg.
1	1554	1555	704
2	1556	1557	705
3	1558	1559	706
4	1560	1561	707
5	1562	1563	1572
6	1564	1565	1573
7	1566	1567	1574
8	1568	1569	1575
9	1570	1571	711

So, if you want to make your seventh sprite white and place it near the bottom left corner of the screen, you would:

POKE 1566,60:POKE 1567,80:POKE 1574,14

The top four sprites in the program are currently defined as ghosts, and the bottom four as little stick men; the missile-sprite is a box. You can of course substitute new data for your own sprite shapes for use in games or even for brightening up text screens. Design your sprites on a grid of 8 (horizontal) by 16 (vertical) pixels in the same way as you would with re-defined characters, and put the data in lines 20 to 37.

Finally, avoid using keyboard input while this program is running as it interferes with the DLI timing and causes screen flicker. If you use this program in a game, use a joystick routine to move your main sprite. If you encounter any problems or difficulties with the program, please drop me a line at the EXCEL address and I'll do my best to help, but please remember to enclose an SAE. Enjoy the program!

```
EW 0 REM ####################################
KR 1 REM #          MULTISPRITE            #
ES 2 REM #        by Robert Stuart         #
HA 3 REM # ------------------------------- #
TK 4 REM # NEW ATARI USER - DEC 1992       #
FB 5 REM ####################################
QD 6 FOR F=1536 TO 1553:POKE F,0:NEXT F:R
   ESTORE 7:FOR F=1554 TO 1571:READ X:POK
   E F,X:NEXT F:POKE 39984,130
MY 7 DATA 70,20,80,30,90,40,100,50,110,20
   ,120,30,130,40,140,50,150,75
CN 8 FOR F=31520 TO 32767:POKE F,0:NEXT F
   :POKE 1572,6:POKE 1573,22:POKE 1574,21
   8:POKE 1575,86
SV 9 POKE 54279,120:POKE 623,17:POKE 710,
   0:POKE 704,14:POKE 705,50:POKE 706,116
   :POKE 707,198:POKE 711,52
QY 16 RESTORE 20:FOR F=32768 TO 32911:REA
   D X:POKE F,X:NEXT F
IO 20 REM SPRITE 1 DATA
SL 21 DATA 0,60,126,255,153,153,255,255,2
   31,219,189,255,255,255,90,90
JH 22 REM SPRITE 2 DATA
SP 23 DATA 0,60,126,255,153,153,255,255,2
   31,219,189,255,255,255,90,90
KA 24 REM SPRITE 3 DATA
ST 25 DATA 0,60,126,255,153,153,255,255,2
   31,219,189,255,255,255,90,90
KT 26 REM SPRITE 4 DATA
SX 27 DATA 0,60,126,255,153,153,255,255,2
   31,219,189,255,255,255,90,90
LM 28 REM SPRITE 5 DATA
EC 29 DATA 0,0,28,28,8,62,93,93,8,20,20,2
   0,20,54,0,0
LM 30 REM SPRITE 6 DATA
DN 31 DATA 0,0,28,28,8,62,93,93,8,20,20,2
   0,20,54,0,0
MF 32 REM SPRITE 7 DATA
DR 33 DATA 0,0,28,28,8,62,93,93,8,20,20,2
   0,20,54,0,0
MY 34 REM SPRITE 8 DATA
DV 35 DATA 0,0,28,28,8,62,93,93,8,20,20,2
   0,20,54,0,0
NR 36 REM SPRITE 9 DATA
ZN 37 DATA 255,129,129,129,129,129,129,12
   9,129,129,129,129,129,129,129,255
AV 47 REM ******************************
EG 48 REM VERTICAL BLANK INTERRUPT CODE
AZ 49 REM ******************************
RX 50 RESTORE 60:FOR F=30720 TO 31078:REA
   D D:POKE F,D:NEXT F
KR 60 DATA 172,1,6,162,0,169,0,153,33,124
   ,232,200,224,16,208,247,173,18,6,141,0
   ,208
XU 61 DATA 172,3,6,162,0,169,0,153,33,125
   ,232,200,224,16,208,247,173,20,6,141,1
   ,208
```

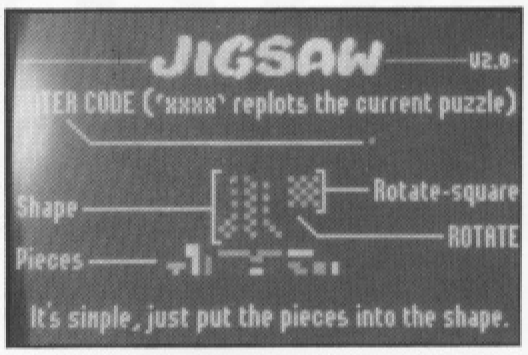
ITE

```
IM 62 DATA 172,5,6,162,0,169,0,153,33,126
   ,232,200,224,16,208,247,173,22,6,141,2
   ,208
TE 63 DATA 172,7,6,162,0,169,0,153,33,127
   ,232,200,224,16,208,247,173,24,6,141,3
   ,208
QP 64 DATA 172,9,6,162,0,169,0,153,129,12
   4,232,200,224,16,208,247
CZ 65 DATA 172,11,6,162,0,169,0,153,129,1
   25,232,200,224,16,208,247
FR 66 DATA 172,13,6,162,0,169,0,153,129,1
   26,232,200,224,16,208,247
IJ 67 DATA 172,15,6,162,0,169,0,153,129,1
   27,232,200,224,16,208,247
HP 68 DATA 172,17,6,162,0,169,0,153,33,12
   3,232,200,224,16,208,247
BR 69 DATA 162,0,189,18,6,157,0,6,232,224
   ,18,208,245
AF 70 DATA 172,19,6,162,0,189,0,128,153,3
   3,124,232,200,224,16,208,244
BB 71 DATA 172,21,6,162,0,189,16,128,153,
   33,125,232,200,224,16,208,244
BP 72 DATA 172,23,6,162,0,189,32,128,153,
   33,126,232,200,224,16,208,244
MF 73 DATA 172,25,6,162,0,189,48,128,153,
   33,127,232,200,224,16,208,244
MB 74 DATA 172,27,6,162,0,189,64,128,153,
   129,124,232,200,224,16,208,244
MQ 75 DATA 172,29,6,162,0,189,80,128,153,
   129,125,232,200,224,16,208,244
SK 76 DATA 172,31,6,162,0,189,96,128,153,
   129,126,232,200,224,16,208,244
IO 77 DATA 172,33,6,162,0,189,112,128,153
   ,129,127,232,200,224,16,208,244
TS 90 DATA 172,35,6,162,0,189,128,128,153
   ,33,123,232,200,224,16,208,244,173,34,
   6,141,7,208,24,105,2,141,6,208
JB 91 DATA 105,2,141,5,208,105,2,141,4,20
   8,76,98,228
QI 97 REM ***************************
QW 98 REM DISPLAY LIST INTERRUPT CODE
QM 99 REM ***************************
WC 100 RESTORE 110:FOR F=31232 TO 31285:R
   EAD D:POKE F,D:NEXT F
DJ 110 DATA 72,173,26,6,141,10,212,141,0,
   208,173,28,6,141,1,208,173,30,6,141,2,
   208,173,32,6,141,3,208
SC 111 DATA 173,36,6,141,18,208,173,37,6,
   141,19,208,173,38,6,141,20,208,173,39,
   6,141,21,208,104,64
WJ 197 REM *********************
NA 198 REM SET INTERRUPT VECTORS
WP 199 REM *********************
QN 200 POKE 54286,0:POKE 548,0:POKE 549,1
   20:POKE 512,0:POKE 513,122:POKE 54286,
   192:POKE 53277,3:POKE 559,62
```

by Robert Stuart

DISK BONUS

JIGSAW



A neat little puzzle by Stephen Logie that will have you at your wit's end

PLUS TETRIS by Richard Carter

A neat version of the classic game

Full details of these programs are on this issue's disk which can be obtained from Page 6 for just £2.95. Send your cheque, P.O. or credit card number to PAGE 6, P.O. Box 54, Stafford, ST16 1TB or telephone us on 0785 213928 for your copy

MAILBAG

Mailbag will be back next issue!

We are extremely pleased to announce that Allan J. Palmer, one of our readers and supporters from the very early days, has volunteered to become Mailbag Editor

Allan has a wealth of experience with the Atari Classic and will welcome your letters and queries to turn Mailbag into an interactive column where information can be shared amongst us all, but he cannot do this alone, he needs your regular letters and feedback.

Write to Mailbag NOW with any questions or comments to get the column started. You feedback is needed right away because the copy deadline for the next issue is looming!

Write to:

MAILBAG, Page 6, P.O. Box 54, Stafford, ST16 1TB

PLEASE MARK THE TOP OF YOUR LETTER 'MAILBAG'

GERMAN GOODIES

UK interest rates are far too low according to one German businessman - interest, that is, in the Atari software produced by his company. Following my report of Ke-Soft merchandise in issue 57 the proprietor Kemal Ezcan received several enquiries from British Atarians - but hardly any orders! The reason for this isn't entirely clear but it seems likely that most users are reticent when it comes to sending monies abroad - hardly surprising after this year's historic chaos in the foreign currency markets! If you were discouraged in this way, the good news is that Micro Discount are acting as agents for Ke-Soft products in the UK and will import certain titles subject to demand (though not necessarily the entire range). Of course, in the absence of sufficient sales to British users it will not make economic sense for Ke-Soft to continue producing English instructions, and one of the few remaining sources of new 8-bit software will disappear. Ke-soft's latest releases (all with English translations) comprise a game and two utilities - one brand new and the other resulting from their recent acquisition of the rights to publish XLent Software titles.

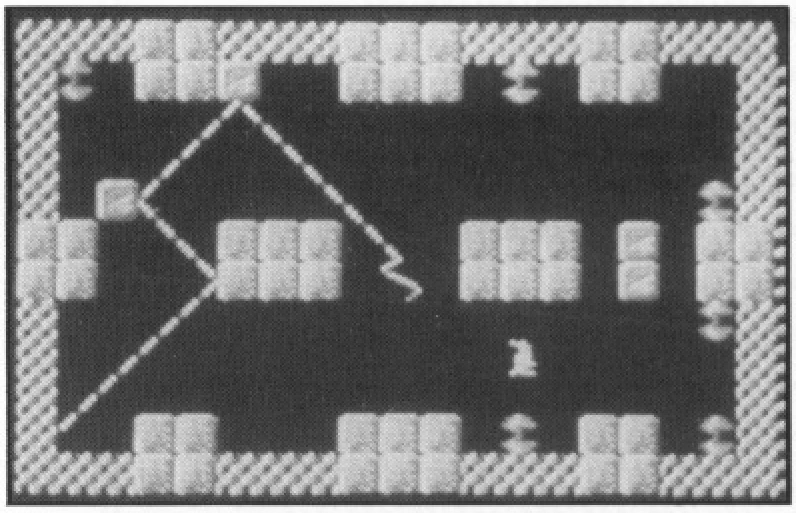
Paul Rixon discovers more new software from Germany. Isn't it time you took a serious look?

LASERMAZE

LASERMAZE is characteristic of other Ke-Soft games, both in style and quality. It's a multi-level puzzle of the type that's exceedingly addictive and has consequently achieved great popularity in the gaming world. This time the story is that a Sorcerer named Monk is stuck in an underground maze and his only chance of escape is to destroy a quantity of dangerous mines in each of fifty caverns. His action will apparently save the world but don't ask how!

Every screen contains a mixture of walls, mines and various special objects. Your task is simply to eliminate the mines by directing a laser beam into them. The laser source cannot be moved but the beam is deflected off of walls and 'reflector boxes' which Monk can push around the screen in response to commands issued from your joystick. There's no time restriction so you can afford to think carefully about the best position for the boxes before letting rip with the laser. Ammunition is limited so you should try not to waste too many shots. If you don't hit a mine and the beam is absorbed by a non-reflective material, you can study the beam's path before your next attempt. Objects to watch out for include ammunition charges, bonus points and killer mutants who rapidly deplete your laser's power. It soon becomes quite a challenge, but fortunately each level has a pass code for direct access in future sessions.

Graphics and sound are reasonable though not, as Murray Walker would say, totally sensational! The game scores highly in the addiction department and, with fifty puzzling levels, is likely to keep you occupied for a worthwhile period. As with other Ke-Soft games of this type the flip-side of the disk contains a screen editor so you can create as many new levels as you wish. My only complaint is that Ke-Soft have (as usual) printed the instructions in red ink on bright orange paper, making them a real effort to read. This may be a clever deterrent against photocopying (and is likely to keep the local opticians in business) but it's not exactly 'user friendly'. A good game though!



KE-COMMANDER

If you're familiar with the increasingly dominant PC machines you've probably come across disk utility programs such as Xtree and Norton Commander which enable you to manipulate files and directories in a simple and efficient manner. KE-COMMANDER is Ke-Soft's implementation of similar facilities for your 8-bit Atari. It provides an alternative to Atari's DUP-.SYS (the program that normally loads when you type DOS from Basic) and claims to be compatible with all Dos 2.x versions. Strangely it refused to work correctly with the DOS contained on KeSoft's distribution disk but had no problems coping with my own copy of Dos 2.5! It also worked fine alongside Turbo Basic.

Ke-Commander is based on a split screen display, each half listing the directory contents of a pre-selected drive. Initially the system is set up to read drives one and two so if you don't

have a second drive, the first thing you encounter is a rather alarming error message! However, you can easily change the default so that both portions display drive one, or any other drive in your system - even a RAM disk. The TAB key toggles a cursor between the two halves and the arrow keys can be used to scroll up and down the list of directory entries. You can have the items sorted by filename, file extension, ascending file size or in the 'normal' sequence. There are viewing facilities for text files, font files and mode 8 or 15 picture files. Simply move the cursor onto the required file, press the appropriate 'view' key and, providing it's in the proper format, Ke-Commander displays the file on screen.

One of the most useful and powerful functions of Ke-Commander is its tagging facility. You can tag and untag individual files by highlighting them with the cursor and pressing the space bar, or you can enter a mask string (such as *.BAS) to capture groups of similar files. The tagged files can then be deleted, locked, unlocked, renamed or copied in one process. In the latter case the two directory listings correspond to the source and destination drives for the copy - if these are the same, Ke-Commander prompts you when to change disks. Other functions let you format disks in single or dual density mode, write DOS and DUP to a disk, toggle the verify facility and launch 'runnable' files.

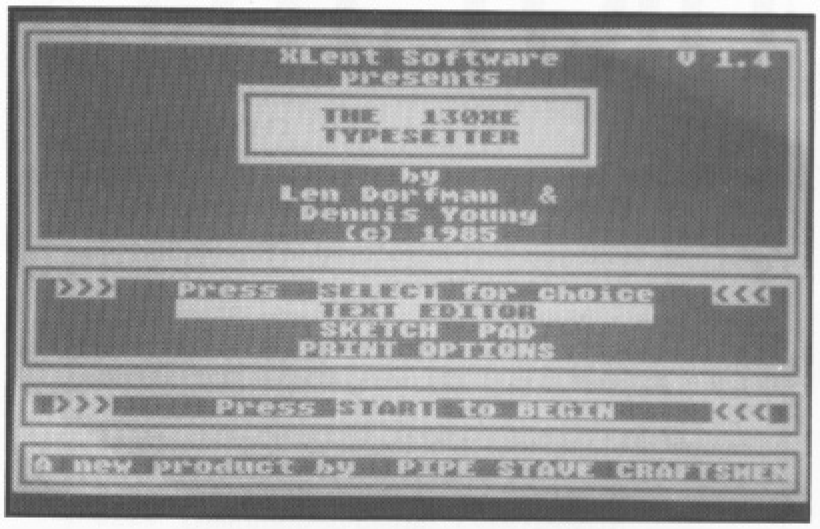
Orange instructions aside Ke-Commander is an extremely capable and time-saving utility. If you frequently struggle with the less than ergonomic interface of Atari's DOS you will be delighted with Ke-Commander's friendly design and powerful complement of functions - especially that tag facility!

TYPESETTER

I reported in a previous article that Ke-Soft were about to re-release some Xlent Software applications including First XLent Word Processor, MegaFont II+ and Page Designer. I was therefore extremely pleased to receive proof of this encouraging news in the form of Typesetter, XLent's desktop publishing program for your 8-bit Atari. The package has many features (fortunately the instructions are printed in a readable colour!) and a full explanation would greatly exceed the space available here, but hopefully an overview will suffice to explain the basics.

Typesetter is supplied in two versions for 64K and 128K machines - the latter is recommended to obtain maximum functionality. The program's aim is to simplify the production of a single page of text and graphics which you can subsequently dump to your printer. It comprises two utilities to help you achieve this - Text Editor and Sketch Pad.

The Text Editor allows you to enter words on the page using different font styles, sizes and typing directions. The screen can only display a small portion of the page but the viewing window scrolls in four directions to reveal the entire area. Control-key commands enable you to switch text styles between standard, graphic symbol and international character sets or to load in fonts from disk (several are supplied). You can set the height and width of characters, rotate them through ninety degrees and type in four directions. You can load pictures in 62-sector format and overlay text and graphics. There are many other commands and 128K users



benefit from extras such as italics, horizontal slice and memory bank switching for increased resolution.

Sketch Pad is a straightforward drawing program that lets you design graphics for inclusion on the main page, or edit segments to improve the detail. Drawing options include fill (using a variety of methods), plot using three alternative brush widths, draw, circle, sphere and colour. You can copy your page design to Sketch Pad and vice versa, or save it independently on disk. Input is by joystick on the 64K version, but for 128K machines there is a choice of joystick, Touch Tablet, or Koala Pad modes.

When it comes to printing your perfected design Typesetter provides options to dump the image vertically using full or half page height, or horizontally. You can output to Epson or Prowriter compatible printers. Because you can't view the entire page without getting a hard copy Typesetter isn't exactly the friendliest program of its type but Ke-Soft will happily offer you other XLent Software utilities which are intended to make life a little easier. Page Designer displays half the page at a time so you can formulate rough layouts and then load them into Typesetter. It also comes with a utility which converts Atari Artist and Koala pictures into uncompressed files. Meanwhile, PS Interface allows the inclusion of Printshop icons and fonts in your page layouts. Typesetter can be purchased with Page Designer and PS Interface at reduced cost. If you're 'into' DTP, note that the highly acclaimed Print Shop is also available from Ke-Soft. If you're looking for a disk drive, they can sell you one of those too!

Once again I must strongly recommend that you check out the commendable services of Ke-Soft. The possibility of future English versions of Ke-Soft games and applications is entirely dependent on your response. It really is a case of support now or regret later.

WHERE DO I GET THEM?

Ke-Soft software can be purchased directly from Kemal Ezcan, Ke-Soft, Frakenstrasse 24, 6457 Maintal 4, Germany. Telephone +49 6181 87539. A price list is available on request. The UK distributor is Derek Fern, Micro Discount, 265 Chester Road, Streetly, West Midlands. B74 3EA. Telephone 021 353 5730. Before ordering you should write or phone for details of the items currently available.

FIRST STEPS IN ASSEMBLY Part 3

Daniel Lea continues his series for the beginner

Last issue you were introduced to two maths commands, so to continue the mathematical theme, we'll look at multiplication and division. Since multiplication is only repeated addition and division is repeated subtraction it is possible to multiply using ADC, and divide using SBC.

Example of multiplication of two single byte numbers.

```
NUM1=20         ;The two numbers which
NUM2=121        ;are to be multiplied
LDX NUM1
LDA #0          ;clear the answer
STA ANS         ;locations
STA ANS+1
TXA             ;check x isn't zero
BEQ END
LOOP LDA
ANS             ;add num2 onto ans
CLC
ADC NUM2
STA ANS
LDA ANS+1       ;if carry add onto
ADC #0          ;high byte
STA ANS+1
DEX
BNE LOOP
END RTS
```

This form of multiplication is fine when the number of loops is quite small. However, if the number of loops becomes a fairly large number then quite a considerable amount of time can be taken to perform the multiplication, well for the microprocessor anyway!

There are ways you can speed up the process, for instance if one or both of the numbers is a multiple of another number e.g.# 30 = 6 * 5. You could first multiply by 6 then multiply the answer by 5. So only 11 additions would be needed rather than 30.

WORK IT OUT!

There are commands available in machine code which are useful if you wish to multiply or divide by factors of two, but before I go on to those you might be wondering since I've shown an example of multiplication as repeated addition, how you go about dividing two numbers? Well rather than give you the program, you can figure it out for yourself! Here are a few pointers though. To make it simple have a 16 bit number divided by an 8 bit number. Now remember the answer to a division is how many subtractions you can make of the number you are dividing by. So you make the computer subtract the 8 bit number from the 16 bit number as many times as is necessary to get it less than the number you are dividing by. The number of times you subtracted is the answer. The number remaining in the end is the remainder! Easy!!

MORE NEW COMMANDS

After that diversion we'll get onto the magic commands for dividing and multiplying by factors of two. These are none other than ASL and LSR!!

ASL stands for *Arithmetic Shift Left*. What it does is shift all the bits in a binary number to the left as below (in binary).

00001101 becomes 00011010
or 13 becomes 26

The effect therefore of ASL is to DOUBLE the number.

The MSB is put into the carry flag e.g.

10000000 becomes 00000000 with 1 in the carry flag

A zero, as you can see, is automatically added to the end of the binary digits.

Format can be in one of two ways:

Firstly the normal addressed format
ASL [address]
Addressing modes which can be used are direct and X indexed direct and the command also works in the zero page forms of these two.

There is also a second available format i.e.

ASL A

which performs the operation on the Accumulator. There is no form to perform this or LSR on the index register.

LSR - *Logical Shift Right*

Shifts the bits Right thus dividing the number by two. This instruction shifts all the bits right and 0 is put in the MSB (8th bit) whilst the LSB (1st bit) is transferred into the carry flag.

10101010 becomes 01010101 and 0 is put in the carry flag

The formats and so on are exactly the same as with ASL.

ROL and ROR

There are two more related commands which are ROL and ROR.

ROL *ROtates the bits Left*
ROR *ROtates the bits Right*

```
10 ;--------------------------
20 ;VBI JOYSTICK CURSOR MOVER
30 ;by D.J.Lea ..    JAN 92
40 ;--------------------------
50 ;
60 JOY=632
70 OUTCHAR=62128
80 ;If you have an old atari 400 or
90 ;800 change OUTCHAR to 62140
0100 ;
0110  *=$0600
0120 ;
0130 ;setup VBI
0140 ;
0150  LDA 546
0160  STA EVBI+1
0170  LDA 547
0180  STA EVBI+2
0190  LDA #VBI&255
0200  STA 546
0210  LDA #VBI/256
0220  STA 547
0230  BRK
0240 ;
0250 ;Vertical Blank interrupt
0260 ;checks joystick
0270 ;moves cursor
0280 ;
0290 VBI
0300  LDA JOY
0310  AND #1
0320  BEQ UP
0330  LDA JOY
0340  AND #2
0350  BEQ DOWN
0360 LFRT LDA JOY
0370  AND #4
0380  BEQ LEFT
0390  LDA JOY
0400  AND #8
0410  BEQ RIGHT
0420 DFNT
0430 EVBI JMP $FFF ;vbi jump
0440 ;
0450 ;Cursor movement routine
0460 ;
0470 UP LDA #28
0480  JSR OUTCHAR
0490  JMP LFRT
0500 DOWN LDA #29
0510  JSR OUTCHAR
0520  JMP LFRT
0530 LEFT LDA #30
0540  JSR OUTCHAR
0550  JMP DFNT
0560 RIGHT LDA #31
0570  JSR OUTCHAR
0580  JMP DFNT
```

ROL is similar to ASL both in action and in addressing modes available etc. The important difference is that when the bits are shifted left the value of the carry flag is put in the LSB. Then, as in ASL, the old MSB is put into the carry flag, e.g.

01111000 with carry flag 1
becomes
11110001 with carry flag 0

ROR is the Equivalent of LSR. How this works is the carry flag is put in the new MSB and, as in LSR, the old LSB is put into the carry flag, e.g.

11110001 with carry flag 0
becomes
011110000 with carry flag 1

ROL and ROR are useful when we consider 16 bit multiplication or division (in factors of two). The routine is similar to 16

```
10 ;
20 ;--------------------------
30 ;Text converter - by D.J.Lea
40 ;21/1/92
50 ;--------------------------
60 ;
65 ;addresses for use in the print
66 ;routine
67 ;
70 CIOV=$E456
80 SBUFF=203
90 ICBAL=$344
0100 ICBLL=$348
0110 ICCOM=$342
0120 PUTREC=8
0130 ;
0140  *=$0600
0150 ;
0160  LDA #TEXT&255 ;Put location of
0170  STA SBUFF      ;text in page 0
0180  LDA #TEXT/256 ;sbuff for use in
0190  STA SBUFF+1 ;convert and print
0200  JSR PRINTIT ;goto print routine
0210 ;
0220 ;text conversion routine
0230 ;
0240 CONVERT
0250  LDY #0 ;start with first
0260 ;character
0270 CLP LDA (SBUFF),Y ;load in a text ch
aracter
0280  CMP #155
0290  BEQ ELP
0300  CMP #32
0310  BEQ ADD
0320  AND #31
0330  CLC
0340  ADC #64 ;make upper case
0350 ;
0360 ;add 96 instead to be lower case
0370 ;add another 128 to invert
0380 ;
0390  STA (SBUFF),Y
0400 ADD INY
0410  JMP CLP ;continue loop
0420 ELP
0430  JSR PRINTIT ;Conversion over
0440  BRK         ;print and end
0450 ;
0460 ;Print text routine
0470 ;
0480 PRINTIT
0490  LDY #0
0500  LDX #0
0510  LDA #127
0520  STA ICBLL,X
0530  LDA #0
0540  STA ICBLL+1,X
0550  LDA #PUTREC
0560  STA ICCOM,X
0570  LDA SBUFF
0580  STA ICBAL,X
0590  LDA SBUFF+1
0600  STA ICBAL+1,X
0610  JSR CIOV
0620  RTS
0630 ;
0640 TEXT .BYTE "TeXT tO SEe",155
```

Continued overleaf ☞

bit addition or subtraction, for example, to multiply a 16 bit number by 2

```
ASL FIG      ;puts the MSB in the carry flag
ROL FIG+1    ;Takes the carry flag into the LSB, puts
             MSB in carry flag
```

Of course we can also divide the numbers by two as follows:

```
LSR FIG
ROR FIG+1
```

LOGICAL OPERATIONS

In machine code you can also manipulate numbers in ways not possible in normal Atari Basic. (If you have Turbo Basic you may have heard of the following). You can perform binary AND, OR or Exclusive OR on a figure and the accumulator.

The three instructions are AND, ORA and EOR.

AND - The AND mnemonic is short for AND with accumulator. To see how this and the other logical operations work it is best to consider the binary equivalents of the numbers.

If both of the bits in the numbers are 1. AND returns a 1 result bit otherwise (i.e. 0 and 1, 1 and 0, or 0 and 0) 0 is the result bit. The symbol for AND is an upside down 'V'. i.e. ^.

```
   Rules              Format
 0  0  1  1           AND [address]
^0 ^1 ^0 ^1
-- -- -- --
 0  0  0  1
```

Addressing modes available: Immediate, direct, indexed direct (X and Y indices), pre- indexed and post indexed indirect.

Examples:

```
LDA #223             11011111
AND #231            ^11100111
                    ------------
Accumulator=199      11000111

LDA #170             10101010
AND #15             ^00001111
                    ------------
Accumulator=10       00001010

LDA #170             10101010
AND #85             ^01010101
                    ------------
Accumulator=0        00000000
```

ORA *(short for OR with Accumulator)* or's the figure in the accumulator. In this operation when both binary digits are 0 then the result bit is also 0, otherwise the result bit is set to 1. The sign used for or is 'V'.

```
   Rules              Format
 0  0  1  1           ORA [address]
v0 v1 v0 v1
-- -- -- --
 0  1  1  1
```

Addressing modes available same as those available with AND.

Examples:

```
LDA #223             11011111
ORA #231            v11100111
                    ------------
Accumulator=255      11111111
LDA #170             10101010
ORA #15             v00001111
                    ------------
Accumulator=175      10101111

LDA #170             10101010
ORA #85             v01010101
                    ------------
Accumulator=255      11111111
```

EOR *(Mnemonic for Exclusive OR with Accumulator)*. In this operation if the binary digits are the same i.e. 1 and 1, or 0 and 0 then the result bit is 0. If they are different i.e. 1 and 0, or 0 and 1 then the result bit is set to 1. The sign for EOR is a 'V' with a line through it.

```
   Rules
 0  0  1  1
⊻0 ⊻1 ⊻0 ⊻1
-- -- -- --
 0  1  1  0
```

Examples

```
LDA #223             11011111
EOR #231            ⊻11100111
                    ------------
Accumulator=56       00111000

LDA #170             10101010
EOR #15             ⊻00001111
                    ------------
Accumulator=165      10100101

LDA #170             10101010
EOR #85             ⊻01010101
                    ------------
Accumulator=255      11111111
```

USES OF THE LOGICAL OPERATIONS

These three logical instructions can be very useful to the programmer, although you may not realise the fact just yet!

AND can be used as a mask i.e. it can block out some bits. For example if you have the binary number 11001010 and only want the bottom four bits AND #15 will mask out the top four bits:

```
 11001010
^00001111
------------
 00001010
```

ORA is used to force certain bits to be set to 1. ORA #240 (11110000) will set the top four bits to 1, and leave the lower four bits unchanged.

```
 xxxxxxxx <-- Any binary number
v11110000
------------
 1111xxxx
```

FIRST STEPS IN ASSEMBLY

continued

EOR is used to toggle bits i.e. if a bit is 1 it is set to 0, or if it is 0 it is set to 1. EOR #15 (00001111) will toggle the bottom four bits and leave the top four unchanged.

```
 11001100
v00001111
-----------
 11000011
```

BIT

There is a final logical operation BIT, it is similar to the AND instruction in almost every way. The only difference is that the accumulator value remains unchanged and only the flags are changed.

The zero flag is set to zero if the result is zero. The sign and overflow flags act differently in that these are set with respect to the memory byte rather than the result bit!

You will of course have already noticed the programs. We have a lower case, upper case, inverse converter, using the logical operators. There is also an improved Joystick recogniser - it runs in a VBI and moves the cursor around in reaction to joystick movement. Notice how, even though it uses VBI's it is much shorter than the joystick program from last time.

That's it. Keep in touch, there is not much more left to learn!

THE TIPSTER



Right I feel in a good mood! Christmas is almost upon us (again!) and the shops have their usual tacky displays of Christmas Trees and musical Elves! What the hell is the world coming to if we reduce the season of goodwill to an unabashed display of decadence!

I've come down off of my soap box and will now start preaching (in no uncertain terms) the message of good Tipstering or how to get the best from the games you've got.

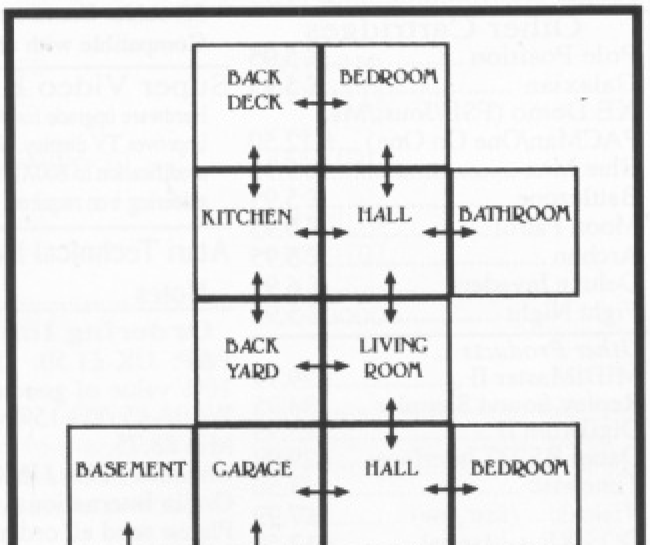
Lots of big 'uns this time, no tiddlers!

FUSEBOX

From near these offices comes the solution to the new P.D. adventure Fusebox courtesy of J. Hough of Newcastle in Staffs. As always it is sdrawkcab so that BLOW FUSE = WOLB ESUF.

TRATS NI YAWLLAH, TSAE, NEPO ETANIBAC, TEG YEK, TSEW,TSEW, TEG YRETTAB, HTUOS, TSAE, EVOM AFOS, TEG THGILHSALF, TRESNI YRETTAB, HTUOS, KCOLNU TESOLC, TEG ESUF, TSEW, OG SRIATS, EVOM KNUJ, HTRON, NEPO XOBREWOP, TEG ESUFDAED, TRESNI ESUF.

There you go that was worth the wait wasn't it?



THE SOLUTION TO INDIAN GOLD

Bill Halsall wrote a superb game called Indian Gold that appeared in this very magazine as you all very well know. From the same man now comes the solution to all those letters that I've received begging for help.

Right o' here it comes.

Kill the black vulture with the bone.

Kill the pink vulture with the gun.

Get water diviner to cross marsh and pick up water bottle, jam jar and beads.

Take the jam jar to a desert screen and leave it at the edge (The scorpion will not appear if you enter a desert screen whilst holding the jam jar.)

Re-enter the desert screen and pick up the jam jar. Remove scorpion with jam jar.

Take water bottle in the desert and leave it there to take drinks from (i.e. pick up and drop) when travelling through desert.

Make peace with the indians by taking beads to them.

Pick up the axe to open the cabin situated just above the room which initially contained the water diviner.

Use the dynamite to remove the landslide. (Further landslides occur regularly so you may need to use the dynamite more than once.)

Pick up the crate and position it under the key on the tree screen.

Pick up the chair and put this above the crate.

Take the white key and open the cabin situated above the screen with the gallows.

Take the seeds to the garden with the bird on and drop them.

The bird will fly over and give you the black key.

Use the diviner to cross the marsh and then use the black key to open the door of the cabin situated beyond the marsh.

Take the spade and move to the space under the noose, touching the fence.

As soon as you touch the correct space the gold coins will appear!

If you want to play again then press START.

There are a few red herrings as well as follows:

Some rooms in the desert are random. Enter them and you could end up anywhere in the desert.

The cabin situated above the screen which initially contains the log cannot be opened. You can try the crowbar on it but if you do you will be shot!

If you take the seeds to the flower screen and then plant them in the space in the border one will grow. It is of no importance whatsoever!

The solid wooden fence can be removed using the dynamite but the path just leads into the desert so it is a waste of time.

Making contact with the gallows, invisible pools in the marsh or staying too long in the desert without a drink gets you killed. You can't swim either!

INFILTRATOR

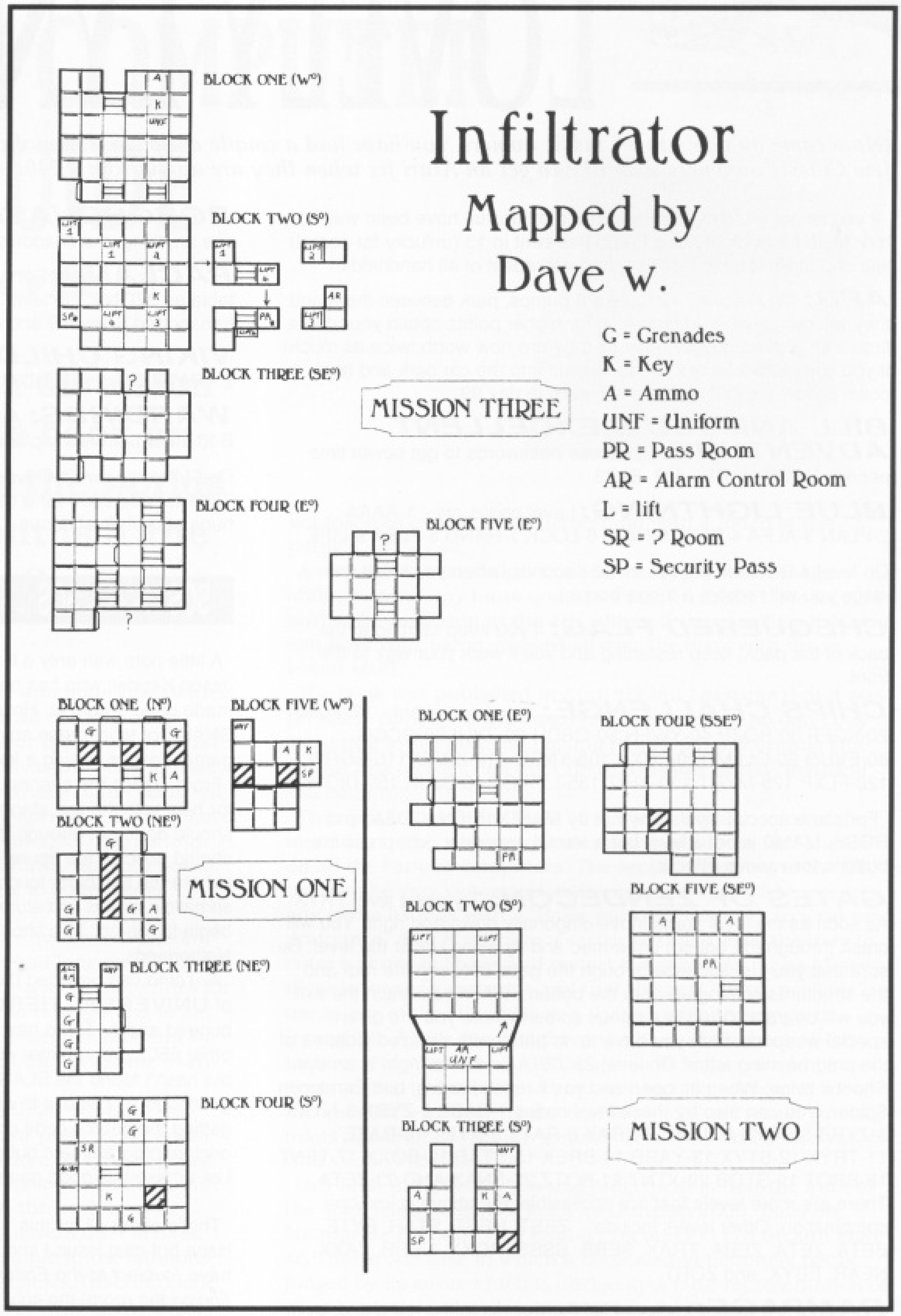
Right, here is the full run down of Infiltrator from the mysterious Dave W. of Birmingham

Take off: Keys B,S,I Revs to 2300, pull back
* key then A :-
Type 728 Mission 1: 175 Mission 2 with 402 home: 263 Mission 3
Keep Orange arrow due north, hold button, pushing forwards
Keys + = Turboboost - = Turboboost off (use temporarily).

Sighting an aircraft press key * and S and REQUEST ID (Retn)

ALLIED PILOTS	ENEMY PILOTS
WHIPPIE	BOOMER
HAYMISH	SCUM
DWEEZIL	BUZZ
GOMER	RATTIE
GIZMO	WEASEL
NAPLES	RHAMBOW
GEOFF	ZIPPY
ZEPH	KOMIE

Your code names are ***INFILTRATOR*** (for Allies) and ***OVERLORD*** (for Enemy)
Watch out for Haymish and Dweezil, they can turn Mercenary and try and shoot you down for money.
Have HUD and R (missiles ready) - the enemy's craft must be in sight (anywhere) for a kill - and G (cannons) must be in your sight.
R - flashing Combat with Chaff + firebutton
H - flashing Combat with Flares + firebutton



Now for the hard part
LANDING:- When you reach the destination, the orange arrow will spin wildly.
Select whisper mode
Hold firebutton
Pull back slowing the rpm to 0
Watch the artificial horizon, you must hold the red part slightly below centre for a slow descent, the chopper will waver so you have to compensate (as if you hadn't got enough to do) to keep the horizon straight. If all is well the ADF with the orange arrow will turn black and Side B will be requested.

GROUND MISSIONS:- You have an inventory with sleeping gas grenade, ID papers (if they are not in order put the guard to sleep!), Gas grenades, Mine detector, camera etc. These are selected with the cursor keys. The mine detector is activated by holding the firebutton in, protecting you for as long as it is held in. Explosives are to be planted (one per room) under a main control panel or laboratory desk (push up). After the last bomb is set you have 20 seconds to evacuate the building. Use the camera to photograph vital doc's, face paper and press fire (one pic per room). Extra grenades etc. can be obtained from cabinets, desks etc. Change uniforms by standing in front of a coat rack. An electronic key can be found, should you wish to turn off the intruder alarm (only once per mission) at the alarm control centre (again Push-up).

When you have completed your mission, rescued whoever, got the proofs, go back to the copter and fly home (Using the same procedures as at the start).

Well that was painless and so is the map if you follow it properly and make good your escape.

DODGY MR. DO!

A slightly dodgy tip here from John Ho of Harleston for Mr DO. This one gives several different effects. Keep pressing RESET, and any one of these combinations may happen.

1) The enemies turn to ghosts and just go sideways
2) You can go straight up to an apple, push up and the enemy goes straight through you, you can then shoot them
3) Or you can go quickly to level to level by shooting one extra life monster

All this is alright but sometimes it doesn't work!



LOVELY LYNX TIPS!

(Now come on you Atari Classic owners, you have had a couple of dozen issues of cracking tuips and there are quite a few Classic owwners who like to get an Atari fix when they are away from a 240v socket!)

If you've got a LYNX then here are the tips you have been waiting for! Mark Fenwick of Long Eaton has sent in 13 (unlucky for some!) tips and tricks for this meanest and wickedest of all handhelds!!

APB: On Highway 12 there's 2 pumps, park between them and they will pump twice as fast. Also for higher points obtain your quota first, then pick up money bags as they are now worth twice as much! If you complete a level then accelerate into the car park and hold down option 1 and 2 and you will warp to day 99

BILL AND TED'S EXCELLENT ADVENTURE: Try these passwords to get seven time periods DADS, JADE, JIJ8, 6AZ9.

BLUE LIGHTNING: Level codes are:- 1-AAAA 2-PLAN 3-ALFA 4-BELL 5-NINE 6-LOCK 7-HAND 8-FLEA 9-LIFE

On level 4-BELL do not fire for 30 seconds, when you finish the stage you will receive a mega-bonus!

CHEQUERED FLAG: If you keep starting at the back of the pack, keep restarting and you'll work your way to the front.

CHIPS CHALLENGE: Level codes are:- 10-VUMA 20-KGFP 30-BQZP 40-YWFH 50-QBDH 60-ZYHI 70-GCCG 80-EVUG 90-OLLM 100-QJXR 105-YNEG 110-XBAD 115-EGRW 120-FLXP 125-MYRT 130-XHIZ 135-LYWO 140-SJUK 159-DIGW

For some special levels why not try MAND, JHEN, COZA, and RGSK. MAND is not a level but a fractal generator, just press the buttons for various effects.

GATES OF ZENDECON: Try using level TRYX. As soon as the level starts move diagonally down and right. You will crash through the bottom unharmed and fly along under the level. Be sure that you just squeeze through the gaps between the roof and the structures coming up from the bottom. When you reach the exit you will be transported to a bonus screen where you are given special weapons, then you have to do battle with digitized pictures of the programming team! On level 23 ZETA on the far right is an eye. Shoot it twice. When its open and you'll reach the big, bad Zendecon Spider. You can also try these level codes 1-BASE 2-ZYBX 3-NYXX 4-ZYRB 5-SRYX 6-BARE 7-XRAY 8-RATT 9-NYET 10-RAZE 11-TRYX 12-STYX 13-YARB 14-BREX 15-STAB 16-BOXX 17-TENT 18-BROT 19-STOB 20-XTNT 21-BOTZ 22-SNAX AND 23-ZETA. There are more levels that are accessible, the above is just one combination. Other levels include:- ZEST, NEST, STAR, BYTE, BETA, ZETA, ZEBA, TRAX, SEBB, SSSS, ROXX, NERB, ZAXX, NEAR, EBYX, and ZORT.

RAMPAGE: Look out for the woman in the red dress, by carrying her around in true King Kong style there's a big bonus to be had. To select any level, when you reach the monster selection screen press [PAUSE] and when the newspaper screen appears press [OPTION1].

ROAD BLASTERS: On the first level drive along the edge of the road while holding down B. As soon as you hit a tree you'll be presented with a "ghost in the machine" screen which shows a digi-pic of one of the programmers. Now press [OPTION1] to select level.

MS PACMAN: For infinite lives press in sequence PAUSE, OPTION1, B, B, A, A, OPTION1. To speed up the game press OPTION1, A, OPTION1, UNPAUSE.

STUN RUNNER: On level 12 (the Coathanger), as soon as you enter the first tunnel go right and collect the boost pad. Now quickly go to the top of the tunnel and you'll go through a hole and be warped to level 18.

ROBOSQUASH: If you've been splattered and can't see anything, the shadows on the wall will show where the ball is.

PACLAND: For 10 lives enter your name on the Hi-score table as 3ZONE. On level 1-2 push a log backwards and you'll be transported to level 9 and given 80,000 points.

VIKING CHILD: The level codes are:- 1 - OMEGAMAN 2 - PATRICIA 3 - REDDWARF 4 - DEWSBURY

WARBIRDS: As soon as you die press PAUSE and then B to enter the enemy plane.

One from my own archives is for ***CRYSTAL MINES 2***. Type in code 0000 for a treasure trove of goodies, powerups and a huge end-of-level bonus.

SOS ... • • • ... SOS ... • • • ... SOS ... • • • ... SOS ... • • • ... SOS

A little note with only a few words on it but they call for help for Jason Kendall who has been playing/living **ULTIMA III** and has made good progress. However he is unable to pass the SILVER SNAKE or to increase any characters MAGIC LEVEL during the game, despite having a level 8+ character.

From across the channel comes the answer to Louise Wood's plea for help with the last stage of **GHOSTBUSTERS**. What she should do to get through the marshmallow mans legs is that she should position the figure in the direction of the middle of the door (where the two parts touch each other) and then, when the marshmallow man is just stumping up and down at one side, she should begin to run up. This should work says Wigeco of Walkenreid in The Netherlands.

A. Tomo has provided the complete solution and map for level one of **UNIVERSAL HERO** but, as everyone will know, this gameis bugged and A. Tomo has volunteered to debug the game if some other 6502 programmer will help him. He has found the main loop but hasn't found the SLARTIBARDFAST input routine yet. My suggestion to A. Tomo is to contact Mastertronic and talk to them about getting the source code or get them to put you in contact with the original programmers but please write in if you want to help A. Tomo. Let's make this good game brilliant.

That's about all for this issue but next issue I should have *(subject to the Editor finding the room)* the solution and maps for Snowball by Level 9 from Simon Carter of 11X in Tonbridge. (How's that Simon, Fat Frog and the Kid, good enough?)

Don't stop sending in all of those great hints, maps and tips to yours truly, they are most utterly important.

Bye, see you next time!!!!

THE TIPSTER,
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STAFFORD,
ENGLAND.
ST16 1DR

FREE CASSETTES!

If your hint, tip or map is used by The Tipster you can claim a FREE CASSETTE (from those currently available from The Accessory Shop) but you won't get one if you don't send something to The Tipster - get tipping now!

HOW TO CLAIM

If you see your name in this column just drop us a line and say 'My name is ..... and I claim my free Tipster cassette' and simply tell us which cassette you would like (give an alternative just in case). We will whip it off to you poste haste (or straight away). If you prefer you can always give us a ring instead on the usual number

CORISH'S COMPUTER GAMES GUIDE

3rd Edition



The Tipster makes a diversion into the world of the book critic when he reviews the worlds largest hint book, but is it the one for Atari owners?

If you want to know how to beat the infamous Bug Blatter Beast of Traal, or want to get rid of all of those nasty dudes in Final Fight then this is your bible or if you just want to show off to your friends then this is the book to have.

It's an A5 book comprising 800 pages (that's right count 'em) with about 4 or 5 tips on each two page spread. The back cover states that the book contains in excess of 1,250 games and 200 adventures and more than 12,000 hints, tips and pokes. That has yet to be proved as I ain't going to count them, anyone want to have a go?

The book is written by a computer store owner in Dunedin, New Zealand (perhaps this is the proverbial long read?) (bad joke! - Ed) who was fed up of rifling through the magazines for a tip or two and from that chaos a legend is beginning to be born. As an aside did you know that the tremendous, but short lived, game Hawkquest came from the very same town? Long live Harvey Kong Tin!

O.K. so who does the book benefit? Well, for starters, the book hasn't got one Atari 8-bit hint, tip or poke. What it has got is millions upon millions of Commodore 64 type in pokes (what makes me think that Mr Corish was somehow a fanatic of the C64?). Apart from that detraction the book is more suitable for ST owners, although it also covers the - are you ready for this? - Amiga, Amstrad CPC, Apple II, the fabulous ST, BBC, C16, C64, C128, Gameboy, Genesis, IBM/PC clone, Lynx (yeeeaaahhh!), Mac, MSX, Nintendo, PC Engine, Sega, Sega Mega Drive and the Spectrum.

It features all the various types of games - platform, racing, adventures, thinkies, shoot-em-ups and simulations. The book is laid out as a list of all the games in alphabetical order with a huge index at the back which acts more like a contents page than an index because they are already in alphabetical order.

The book has a nice friendly feel to it and is very easy to read. The format of the tips come in any number of different guises that are either cheat mode activating words, descriptions of how to complete sections, type in listings or in the case of adventures, either hints to difficult bits or complete and chatty solutions. You won't find any maps so don't buy it if that is all you are after, just read the Tipster's column every issue and that should give you all you'll ever need. (If not then write in and tell me what you are missing!) One thing I will say is that the adventure solutions are described in such a chatty manner that they tend to hide or mask some important instructions if not followed exactly to the letter (and with a touch of telepathy!).

A nice touch that makes the book more enjoyable is the ability to send any hints and tips that you might have into the author for inclusion in the 4th edition (I suppose?) so that you can have your name sprayed all over the book with the relevant stuff.

The book was published in April '92 but I assume that it was probably completed in January '92 at the latest so don't buy it expecting to see hints on playing Robocop 3 or Formula One Grand Prix as they just ain't there. Possibly in that mythical 4th edition?

The appendices at the back of the book explain some of the more day to day aspects of entering cheat modes and cheats on all the various computers. The section referring to the ST tends to be very vague and skims over the subject of entering any of the listings with a "Basic package" faster than a rat up a drain pipe. Also it refers to a cartridge that allows the user to enter a series of Pokes and restart the game. As far as I know there is no such cartridge and that the best "Basic package" to use is one of the HiSoft Basic's that compile the program (essential). A nice touch right at the back of the book is the inclusion of a readers questionnaire which they would like every reader to complete to improve the next edition. Some of the questions include "Is the text to small?" or "would you like maps and charts with the games?" (Yes, yes, and thrice yes, for God's sake YES!!!!!)

One final thing before passing judgement is that the front of the book features games such as Gunship 2000, Baby Jo, Microprose Formula One Grand Prix and F-117a Stealth Fighter. This is one case in which a book should definitely not be judged by its cover which is obviously a false representation of what is inside and it shouldn't be bought on that pretence.

To sum up, if you like computer games and own an ST and maybe one of those horrible tacky console things then this book could be the one for you, with the console tips being predominant along with the tons of C64 tips. If you own an ST or/and one of the many 8-bit computers then this might be of some use, but don't expect it to have everything that you want in it. If you own one of the Atari Classics then the only things that might interest you might be some of the adventure solutions, but nearly £15 for a few solutions and the thickest coffee mat in history is a bit steep.

Name: **Corish's Computer Games Guide 3rd Edition**
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Price: **£14.95**

FONT AND DISPLAY DATA CREATOR

Steve Lakey brings you a data creator to use with the Editor in the last issue

This issue we have Font And Display Data Creator, which should be used in conjunction with data files produced by my last program, the Font And Display Editor. What Listing 2 does, is not only convert data files into DATA statements, but it also produces either a font, or a display subroutine that when called prepares the display, leaving you to turn it on with a POKE 559, 34 or, if you wish to use Player Missile Graphics, POKE 559, 62. As usual, make sure you save all listings before running them.

Listings 3 and 4 are examples of subroutines produced. Listing 3 redefines characters zero to nine, whilst Listing 4 is the background display to a shoot-em-up game, predominately written in BASIC, that is presented in a later listing. If you were put off by all the data in Listing 1, type in Listing 4 and see just what can be created.

THE DATA CREATOR

When run you will be asked if you are using disk or cassette, then by pressing < or >, you can choose between them. Next you have to choose between font and display data and if using a disk drive a file name will be requested. As in the editor program, this should not include a drive identifier (e.g. CHAR1.FNT). Next enter the drive number between 1 and 4 ([RETURN] will choose D1:).

If DISPLAY was selected, you are then asked how wide your display is. This will be the number of horizontal screens set, but if a NORMAL or vertical scrolling display (not vertical and horizontal) was used, then this value should equal one. As we are on the subject of displays, now is an appropriate time to point out that the data creator can only handle displays up to a maximum size of 4800 bytes. As one display takes 800 bytes, then this maximum is equal to six screens. Using a display larger than the limit will cause a MEMORY FULL error. Although six screens is the maximum size, this does not mean that you can't use a display with a width larger than this. For example, if using the formula, SIZE= LINE+1 x (WIDTH x 40), you used a display width of ten screens and saved down to line eleven, the total size would equal, 11+1 x (10x40)=4800 bytes.

If you chose font data, then you will be asked to choose between a SELECTED and a WHOLE font. A SELECTED font should be chosen if you wish to define a section of a font (e.g. 0123456789). This has the advantage of creating a smaller sub-routine, whereas the WHOLE choice, creates a full 128 character font, using about 80 lines. Listing 3 is an example of a SELECTED font, whereas Listing 4 uses the WHOLE font sub-routine.

After selecting the line number for your sub-routine, you will be asked to prepare your disk/tape, then your data will be loaded.

If you chose a SELECTED font, you will be shown a box containing all 128 characters. This is so you can tell the program what character designs to grab from the font just loaded. As an example, to redefine characters A to Z, you would use the cursor keys to move the cursor over to character A, then you would press key 1, which would highlight character A. You would then move to character Z and press key 2, then all characters between A and Z will be highlighted. To deselect any characters repeat the process. Once all characters you wish to redefine are highlighted, press [RETURN]. If you don't select any characters before pressing [RETURN] then ERROR 5 will be displayed during the creation process and you will have to begin again.

After the sub-routine has been created, and if you are using a disk drive, you will be asked for a file name, again without drive identifier. Then your file will be LISTed to disk/tape. To load this file you should use the ENTER command. After saving, you will be asked whether you wish to save another copy, and if so , another file name will be requested.

When you answer no to any more copies, you will be warned that the sub-routine will be deleted with a press of the [RETURN key], so if you change your mind about wanting another copy, press any other key. Once the program has been deleted, you will have the option to begin again.

Whenever you use both a font and a display sub-routine in a listing, the font sub-routine should always be called first. Although you may use a font sub-routine by itself, a display sub-routine should be set up as follows:-

```
[LINE No. ] PAGE=152: SET=PAGE*256: BASE=756: REM Set
    Up Variables
[LINE No. ] GOSUB [DISPLAY SUB-ROUTINE]
[LINE No. ] POKE BASE, 224: POKE 559, 34: REM Set Old
    Font & Show Display
[LINE No. ] GOTO [THIS LINE]
```

The first line, in the above example, is the important line. I hope you can make use of Listing 2.

In the next Issue I will present a program showing the development of Listing 4 into a full game.

FONT AND DISPLAY
DATA CREATOR

```
AE 10 REM *****************************
PX 15 REM * FONT/DISPLAY DATA CREATOR *
EN 20 REM *            By             *
TK 25 REM *      Stephen Lakey        *
UU 30 REM * ------------------------- *
RF 35 REM *       LISTING 2           *
UV 40 REM * ------------------------- *
OR 45 REM * NEW ATARI USER - DEC 1992 *
AI 50 REM *****************************
WF 55 DIM PATH$(33),NUM$(5),RM$(160),INFO
   $(7),LINE$(128),C$(5),MED$(33)
DD 60 N0=0:N1=1:N2=N1+N1
GA 65 GRAPHICS N0:POKE 710,N0:POKE 709,12
UY 70 POKE 82,N0:REM LEFT MARGIN
ZK 75 POKE 752,N1:REM CURSOR OFF
KT 80 POSITION N0,N0
EP 85 ? "┌──────────────────────────────────
   ─────┐";
TK 90 ? "│    FONT/DISPLAY DATA CREATO
   R     │";
DN 95 ? "└──────────────────────────────────
   ─────┘";
GI 100 REM LOAD FROM CASSETEE OR DISK?
KB 105 ? "Cassette/Disk      Use '<','>' Or
   [RETURN]"
SF 110 VERT=PEEK(84)-N2
QT 115 GOSUB 1490:REM CHOOSE OPTION
LQ 120 INOUT=VAR:REM -1=TAPE 1=DISK
RO 125 REM CREATE FONT OR SCREEN DATA?
FO 130 POSITION N0,VERT+N2
UW 135 ? "Font/Display
         "
SL 140 VERT=PEEK(84)-N2
XO 145 GOSUB 1490
KK 150 WHICH=VAR:REM -1=FONT 1=DISPLAY
NT 155 POSITION N0,VERT+N2:DOIT=N0
FH 160 REM IF DISK GET FILENAME
HR 165 CLOSE #N1:OPEN #N1,4,N0,"K:"
PI 170 IF INOUT<>N1 THEN 275
JZ 175 LN=N0:POKE 764,255
WE 180 ? "Filename:";:PATH$="  "
IE 185 POKE 752,N0:GET #N1,CODE
CZ 190 IF CODE=155 AND LN>N0 THEN 250
CS 195 IF CODE=126 AND LN>N0 THEN 205
OK 200 GOTO 215
IE 205 ? CHR$(CODE);
GG 210 PATH$=PATH$(N1,LEN(PATH$)-N1):LN=L
   EN(PATH$)-3:GOTO 185
IX 215 IF LEN(PATH$)=33 THEN 235
RE 220 IF CODE>=ASC("0") AND CODE<=ASC("9
   ") THEN 240
AK 225 IF CODE>=ASC("A") AND CODE<=ASC("Z
   ") THEN 240
DZ 230 IF CODE=ASC("*") OR CODE=ASC("_")
   OR CODE=ASC(".") THEN 240
RB 235 ? CHR$(253);:GOTO 185
ZV 240 ? CHR$(CODE);:PATH$(LEN(PATH$)+N1)
   =CHR$(CODE):LN=LEN(PATH$)-3
RW 245 GOTO 185
AN 250 POSITION N0,VERT+4:? "Drive Number
   (1-4):";
TK 255 GET #N1,CODE:IF CODE=155 THEN CODE
   =49:GOTO 265
IU 260 IF CODE<49 OR CODE>52 THEN 255
DX 265 ? CHR$(CODE):VERT=VERT+6
SP 270 PATH$(N1,3)="D1:":PATH$(N2,N2)=CHR
   $(CODE)
VS 275 IF DOIT<>N0 THEN RETURN
LY 280 IF WHICH=-N1 THEN 330
XT 285 REM DO DISPLAY OPTION
AZ 290 IF INOUT=N1 THEN ?
FO 295 ? "How Wide Is Display(01-10 Scree
   ns):  ◄◄";:X=PEEK(85):Y=PEEK(84):C=N0:
   NUM$=""
ES 300 MAX=N2:GOSUB 1425:REM MAX.2 DIGITS
HG 305 IF VAL(NUM$)<N1 OR VAL(NUM$)>10 TH
   EN ? "  ";CHR$(253):POSITION N0,Y:GOTO
    295
RU 310 POSITION X,Y:? NUM$;" "
BA 315 WIDE=VAL(NUM$)
RC 320 GOTO 365
JG 325 REM DO FONT OPTION
AO 330 IF INOUT=N1 THEN ?
BZ 335 POKE 752,N1
WB 340 ? "Whole/Selected Font
         "
TC 345 VERT=PEEK(84)-N2
XD 350 GOSUB 1490
KD 355 FONT=VAR:REM -1=WHOLE 1=SELECTED
JC 360 REM GET LINE NUMBER
DH 365 ?
VF 370 ? "Enter Line Number(3000-30000):
      ◄◄◄◄◄";:X=PEEK(85):Y=PEEK(84):C=N0
   :NUM$=""
TB 375 MAX=5:GOSUB 1425
VS 380 IF VAL(NUM$)<3000 OR VAL(NUM$)>300
   00 THEN ? "  ";CHR$(253):POSITION N0,Y
   :GOTO 370
SX 385 POSITION X,Y:? NUM$;" "
DD 390 LINE=VAL(NUM$):LINE1=LINE
WL 395 REM LOAD IN FONT/DISPLAY DATA
ZP 400 POKE 764,255:MED$="Disk ":IF INOUT
   <N1 THEN MED$="Cassette "
WU 405 ? :? "Prepare ";MED$;"For Loading
   Data,":? "Then Any Key."
VS 410 D=N2^N2:IF PEEK(764)=255 THEN 410
ZI 415 AUX2=N0:IF INOUT=N1 THEN 425
AW 420 PATH$="C:":AUX2=128
BD 425 TRAP 1405:REM HANDLE I/O ERRORS
FN 430 CHAN=N2:IOCB=832+CHAN*16:INFO$="12
   34567"
BW 435 CLOSE #CHAN:OPEN #CHAN,4,AUX2,PATH
   $
WU 440 POKE IOCB+N2,7:REM 'GET' COMMAND
RD 445 IHI=INT(ADR(INFO$)/256)
AQ 450 ILO=ADR(INFO$)-IHI*256
FZ 455 POKE IOCB+4,ILO:REM BUFFER
RX 460 POKE IOCB+5,IHI
IL 465 POKE IOCB+8,7:REM 7 BYTES
FP 470 POKE IOCB+9,N0
TL 475 CIO=USR(ADR("hhh█LV█"),CHAN*16):RE
   M CALL CIO TO LOAD INFORMATION
XB 480 BUFFER=30720:BHI=INT(BUFFER/256):B
   LO=BUFFER-BHI*256
OG 485 LLO=ASC(INFO$(N1,N1)):LHI=ASC(INFO
   $(N2,N2))
BD 490 POKE IOCB+4,BLO:REM BUFFER
OD 495 POKE IOCB+5,BHI
RN 500 POKE IOCB+8,LLO:REM LENGTH
WI 505 POKE IOCB+9,LHI
KG 510 CIO=USR(ADR("hhh█LV█"),CHAN*16):RE
   M CALL CIO TO LOAD DATA
SR 515 IF WHICH=-N1 THEN 1005:REM CREATE
   FONT SECTION
EP 520 REM CREATE 'DISPLAY SECTION'
BQ 525 RESTORE 1720:? CHR$(125):POKE 752,
   N0:POSITION N0,N0:? "Creating BASIC pr
   ogram...":C=N1:DLNE=LINE+250
GJ 530 POSITION N0,3:? LINE;" ";:READ LIN
   E$:GOSUB 985:REM REPLACE '!' WITH ','
LW 535 IF LINE$(N1,N1)=">" THEN LINE$=LIN
   E$(N2):ON C GOSUB 645,670,680,710,690,
   775,775,785,795,805,700:C=C+N1
WH 540 ? LINE$:? :? "CONT":POSITION N0,N1
   :POKE 842,13:STOP
```

continued ☛

FONT AND DISPLAY
DATA CREATOR

```
QI 545 POKE 842,12:FOR I=N1 TO 6:POSITION
    N0,N2:? CHR$(156):NEXT I
GV 550 IF LINE$="RETURN" THEN 570
UI 555 GOSUB 1385:REM MEMORY FULL?
MX 560 LINE=LINE+5:GOTO 530
OX 565 REM CREATE 'DISPLAY' DATA
UF 570 MEM=(PEEK(89)*256+PEEK(88))+120:SZ
    =LHI*256+LLO:M=MEM+24:C$="01":POKE 752
    ,N1
RV 575 FOR I=N0 TO SZ-N1 STEP 80
FL 580 POSITION N0,3:? "Converting Charac
    ters = "
MN 585 LINE$=STR$(DLNE):LINE$(LEN(LINE$)+
    N1)=" DATA ":LINE$(LEN(LINE$)+N1)=C$
GH 590 E=79:IF SZ-N1-I<79 THEN E=SZ-N1-I
LB 595 FOR L=I TO I+E:POKE M,PEEK(BUFFER+
    L):GOSUB 950:REM CONVERT TO ATASCII
YV 600 IF Z=27 THEN LINE$(LEN(LINE$)+N1)=
    CHR$(Z)
FV 605 LINE$(LEN(LINE$)+N1)=CHR$(Y)
RJ 610 NEXT L:LINE$(LEN(LINE$)+N1)=C$:POS
    ITION N0,3:? "
        "
HE 615 POSITION N0,3:? LINE$:? :? "CONT":
    POSITION N0,N1:POKE 842,13:STOP
ED 620 POKE 842,12:FOR C=N1 TO 6:POSITION
     N0,2:? CHR$(156):NEXT C
WX 625 DLNE=DLNE+N2:GOSUB 1385:NEXT I
PQ 630 ? "Finished!":?
RR 635 GOTO 815
MA 640 REM SET 5 COLOURS
IW 645 Q=N1:FOR I=3 TO 7
TX 650 IF LINE$(Q,Q)<>"#" THEN Q=Q+N1:GOT
    O 650
UC 655 C$=STR$(ASC(INFO$(I,I))):LINE$(Q,Q
    +LEN(C$)-N1)=C$
MY 660 NEXT I:RETURN
IK 665 REM CREATE 'LENGTH' VALUE
YT 670 NUM=WIDE:GOTO 970
GU 675 REM " 'ROWS' "
QK 680 NUM=LHI*256+LLO:NUM=NUM/(WIDE*40):
    GOTO 970
LJ 685 REM SET DATA LINE
XS 690 NUM=DLNE:GOTO 970
DC 695 REM SET GOTO LINE
NQ 700 NUM=LINE-25:GOTO 970
JU 705 REM SET LINE
OC 710 NUM=LINE+5:GOTO 970
KN 715 REM SET STRING
HP 720 IF RET=N1 THEN 730
RC 725 Q=N1:RET=N1
CC 730 NM=N0:LINE$="FONT$(LEN(FONT$)+N1)=
    ":LINE$(LEN(LINE$)+N1)=CHR$(34)
OA 735 FOR L=Q TO LEN(RM$):IF RM$(L,L)<>C
    HR$(34) THEN 760
KX 740 LINE$(LEN(LINE$)+N1)=CHR$(34):LINE
    $(LEN(LINE$)+N1)=":FONT$(LEN(FONT$)+N1
    )=CHR$(34)"
GW 745 Q=L+N1:IF L>=LEN(RM$) THEN RET=N0
TV 750 POP
AC 755 RETURN
ZG 760 LINE$(LEN(LINE$)+N1)=RM$(L,L):NM=N
    M+N1:IF NM>19 THEN LINE$(LEN(LINE$)+N1
    )=CHR$(34):GOTO 745
AG 765 NEXT L:RET=N0:RETURN
JT 770 REM SET LINE
KW 775 NUM=LINE+20:GOTO 970
JV 780 REM SET LINE
LK 785 NUM=LINE-10:GOTO 970
JX 790 REM SET LINE
KM 795 NUM=LINE+10:GOTO 970
JG 800 REM SET LINE
```

```
LJ 805 NUM=LINE-20:GOTO 970
JH 810 REM QUIT OR RESTART?
JX 815 IF INOUT<N1 THEN 825
VF 820 ? "Save ";:VERT=PEEK(84)-N2:DOIT=N
    1:GOSUB 165:? :REM FILENAME
DK 825 ? "Prepare ";MED$;"For LISTing Pro
    gram,":? "Then [RETURN]."
FL 830 POKE 764,255:D=N2^N2
QX 835 IF PEEK(764)<>12 THEN 835
WW 840 POKE 764,255
PA 845 LIST PATH$,LINE1,DLNE
JE 850 ? "Another Copy(Y/N)?"
QU 855 GET #N1,KEY:IF KEY<>ASC("Y") AND K
    EY<>ASC("N") THEN 855
XU 860 IF KEY=ASC("Y") THEN ? CHR$(125):G
    OTO 815
KR 865 ? :? "WARNING:CREATED PROGRAM WILL
     BE DELETED.Press [RETURN] To Delete O
    r Any Key."
WU 870 GET #N1,KEY:IF KEY<>155 THEN ? CHR
    $(125):GOTO 850
CL 875 GOSUB 905:REM DELETE NEW LINES
YG 880 ? :? "Do You Wish To Restart(Y/N).
    "
EZ 885 GET #N1,ANY:IF ANY<>ASC("Y") AND A
    NY<>ASC("N") THEN ? CHR$(253);:GOTO 83
    0
ES 890 IF ANY=ASC("Y") THEN GOSUB 1385:RU
    N
EO 895 POKE 752,N0:END
FS 900 REM DELETE LINES
ZI 905 GOSUB 1940:MEM=MEM+PEEK(MEM+N2)
NX 910 L=PEEK(MEM+N1)*256+PEEK(MEM)
GJ 915 ? CHR$(125):POSITION N0,N0:? "Dele
    ting Lines... "
BF 920 POSITION N0,3:? L;:? :? "CONT":POS
    ITION N0,N1:POKE 842,13:STOP
FY 925 POKE 842,12:POSITION N0,N1:FOR I=N
    1 TO 4:? CHR$(156);:NEXT I
OB 930 L=PEEK(MEM+N1)*256+PEEK(MEM)
CH 935 IF L<32768 THEN 920
HK 940 ? CHR$(125):RETURN
PB 945 REM CONVERT SCREEN CODE TO ASCII
GG 950 LOCATE 24,3,Y
AP 955 Z=0:IF Y>26 AND Y<32 OR Y>124 AND
    Y<128 OR Y>155 AND Y<160 OR Y>252 THEN
     Z=27
ZR 960 RETURN
YM 965 REM INCLUDE A NUMBER
KP 970 Q=N1:FOR I=N1 TO LEN(LINE$)
JV 975 IF LINE$(Q,Q)="#" THEN C$=STR$(NUM
    ):LINE$(Q,Q+LEN(C$)-N1)=C$:POP :RETURN
RH 980 Q=Q+N1:NEXT I:RETURN
SE 985 REM CHANGE '!' TO ','
YI 990 FOR I=N1 TO LEN(LINE$):IF LINE$(I,
    I)="!" THEN LINE$(I,I)=","
NW 995 NEXT I:RETURN
SY 1000 REM CREATE 'FONT' SECTION
PX 1005 RESTORE 1580:IF FONT<N1 THEN REST
    ORE 1675:GOTO 1220
RN 1010 GRAPHICS N0:POKE 82,N0:POKE 710,N
    0:POKE 752,N1:POSITION N0,N0:? "'SELEC
    TED FONT'":? "────────────"
OO 1015 ? "Use:[CURSOR KEYS] To Move.
            [1] To Select/Deselect A
  Character.    [2] To Join [1] And [2
    ]."
XM 1020 ? "    [RETURN] To Continue.":?
UY 1025 ? "    ┌──────────────────────
    ─────┐      ";:Y=PEEK(84)
JX 1030 FOR L=Y TO Y+3:POSITION N0,L:? "
    |":POSITION 36,L:? "|    ";:NEXT L
```

FONT AND DISPLAY
DATA CREATOR

```
DZ 1035 ? "  └──────────────────────┘  ";
PP 1040 MEM=PEEK(88)+PEEK(89)*256+(Y*40)+4:M=MEM
BI 1045 FOR I=N0 TO 127 STEP 32
AA 1050 FOR X=I TO I+31:POKE MEM+X-I,X:NEXT X
FS 1055 MEM=MEM+40:NEXT I
KW 1060 X=N0:Y=X:FS=-N1:FF=FS:MO=M:MN=M+151
OB 1065 K=PEEK(M):POKE M,128:FOR D=N1 TO 5:NEXT D:POKE M,K:FOR D=N1 TO 5:NEXT D
EW 1070 IF PEEK(753)=N0 THEN 1065
YV 1075 KEY=PEEK(764)
YV 1080 IF KEY=7 THEN X=X+N1:M=M+N1:IF X>31 THEN M=M+8:X=N0:Y=Y+N1:IF Y>3 THEN Y=3:M=MN:X=31
RP 1085 IF KEY=6 THEN X=X-N1:M=M-N1:IF X<N0 THEN M=M-8:X=31:Y=Y-N1:IF Y<N0 THEN Y=N0:M=MO:X=N0
AN 1090 IF KEY=14 THEN M=M-40:Y=Y-N1:IF Y<N0 THEN Y=N0:M=M+40
ZP 1095 IF KEY=15 THEN M=M+40:Y=Y+N1:IF Y>3 THEN Y=3:M=M-40
KS 1100 IF KEY<>31 THEN 1120
SP 1105 Q=PEEK(M):IF Q>127 THEN Q=Q-128:GOTO 1115
JQ 1110 Q=Q+128
WO 1115 POKE M,Q:FS=M:XO=X:YO=Y
PX 1120 IF KEY<>30 THEN 1180
BF 1125 FF=M:IF FF<FS THEN 1155
MO 1130 FS=FS+N1:XO=XO+N1:IF XO>31 THEN FS=FS+8:XO=N0:YO=YO+N1
KZ 1135 Q=PEEK(FS):IF Q>127 THEN Q=Q-128:GOTO 1145
JZ 1140 Q=Q+128
DH 1145 POKE FS,Q:IF FS<>FF THEN 1130
SX 1150 GOTO 1065
CK 1155 FS=FS-N1:XO=XO-N1:IF XO<N0 THEN FS=FS-8:XO=31:YO=YO-N1
GV 1160 Q=PEEK(FS):IF Q>127 THEN Q=Q-128:GOTO 1170
KZ 1165 Q=Q+128
LY 1170 POKE FS,Q:IF FS<>FF THEN 1155
TX 1175 GOTO 1065
ST 1180 IF KEY<>12 THEN 1065
PS 1185 M=MO:RM$="":Y=8:X=4:C=N0
ZD 1190 POSITION N0,14:? "Constructing string:";:? 127-C;"  "
IV 1195 Q=159:IF PEEK(M)>127 THEN LOCATE X,Y,Q:Q=Q-128
WT 1200 IF Q<>159 THEN IF Q>26 AND Q<32 OR Q>124 THEN RM$(LEN(RM$)+1)=CHR$(27)
HX 1205 IF Q<>159 THEN RM$(LEN(RM$)+1)=CHR$(Q)
IN 1210 M=M+N1:X=X+N1:IF X>35 THEN X=4:Y=Y+N1:M=M+8:IF Y>11 THEN 1220
YZ 1215 C=C+N1:GOTO 1190
NY 1220 ? CHR$(125):POKE 752,N0:POSITION N0,N0:? "Creating BASIC program...":C=N1:DLNE=LINE+200:RET=N0
RU 1225 READ LINE$:GOSUB 985:REM REPLACE '!' WITH ','
OX 1230 POSITION N0,3:? LINE;" ";
EM 1235 IF LINE$(N1,N1)=">" AND FONT=N1 THEN LINE$=LINE$(N2):ON C GOSUB 710,690,720:C=C+N1
OQ 1240 IF LINE$(N1,N1)=">" AND FONT<N1 THEN LINE$=LINE$(N2):ON C GOSUB 690:C=C+N1
ZB 1245 ? LINE$:? :? "CONT":POSITION N0,N1:POKE 842,13:STOP
NM 1250 POKE 842,12:FOR I=N1 TO 6:POSITION N0,2:? CHR$(156):NEXT I
SG 1255 GOSUB 1385:IF RET=N1 THEN C=C-N1:LINE=LINE+5:LINE$=">>":GOTO 1230
MD 1260 IF LINE$="RETURN" THEN 1275
TD 1265 LINE=LINE+5:GOTO 1225
QL 1270 REM CREATE 'FONT' DATA
MZ 1275 IF FONT<N1 THEN 1350
LK 1280 C=N1:POSITION N0,N1:? "Character: ` '":FOR I=N1 TO LEN(RM$)
MI 1285 POSITION N0,4:? DLNE;" DATA ";
ZE 1290 IF RM$(I,I)=CHR$(27) AND C<>27 THEN C=27:NEXT I
ZY 1295 POSITION 11,N1:IF C=27 THEN ? CHR$(C);:C=N1
QS 1300 ? RM$(I,I):MEM=PEEK(88)+PEEK(89)*256+51:M=PEEK(MEM)*8+BUFFER
MF 1305 POSITION 12,4:FOR BYTE=N0 TO 6
FE 1310 ? PEEK(M+BYTE);",";
UT 1315 NEXT BYTE:? PEEK(M+BYTE):? "CONT"
EV 1320 POSITION N0,2:POKE 842,13:STOP
GY 1325 POKE 842,12:DLNE=DLNE+N2
EQ 1330 FOR Q=N1 TO 6:POSITION N0,N2:? CHR$(156);:NEXT Q
VC 1335 GOSUB 1385:REM MEMORY FULL?
CB 1340 NEXT I:? :? "FINISHED!":?
UC 1345 GOTO 815
FP 1350 FOR I=N0 TO 1023 STEP 16
MB 1355 POSITION N0,4:? DLNE;" DATA ";
OF 1360 FOR BYTE=BUFFER+I TO BUFFER+I+15
OQ 1365 ? PEEK(BYTE);:IF BYTE<BUFFER+I+15 THEN ? ",";
RR 1370 NEXT BYTE:? :? "CONT"
QT 1375 GOTO 1320
ZB 1380 REM CHECK FOR MEMORY FULL
YQ 1385 NUM=PEEK(15)*256+PEEK(14)
VL 1390 IF NUM<30600 THEN RETURN
FC 1395 ? CHR$(125):? "MEMORY FULL!!":END
TJ 1400 REM HANDLE ERROR
PH 1405 ? :? "Error No.";PEEK(195);",Press Any Key."
GC 1410 POKE 764,255
RC 1415 GET #N1,ANY:POP :GOTO 65
UB 1420 REM GET NUMBER INPUT
YP 1425 POKE 764,255:POKE 752,N0
ES 1430 GET #N1,CODE:IF CODE=126 THEN ON C<N1 GOTO 1430:C=C-N1:? CHR$(CODE);:GOTO 1430
RQ 1435 IF CODE=155 AND C>N0 THEN 1460:REM RETURN KEY
YA 1440 IF C=MAX THEN 1430
CM 1445 IF CODE<48 OR CODE>57 THEN ? CHR$(253);:GOTO 1430
JI 1450 ? CHR$(CODE);:C=C+N1:GOTO 1430
UW 1455 REM CONVERT TO STRING
WX 1460 FOR NUM=N0 TO C-N1:LOCATE X+NUM,Y,Q
NM 1465 IF Q=32 AND NUM=N0 THEN NUM$="0":POP :GOTO 1480
NJ 1470 NUM$(NUM+N1,NUM+N1)=CHR$(Q)
II 1475 NEXT NUM
LG 1480 POKE 752,N1:RETURN
XS 1485 REM CHOOSE OPTION
QU 1490 VAR=-N1:POKE 764,255
AC 1495 IF PEEK(764)=12 AND PEEK(753)=3 THEN 1495
GB 1500 POKE 764,255
AO 1505 KEY=PEEK(764):PRESS=PEEK(753)
YR 1510 IF PRESS<>3 THEN 1505
XJ 1515 IF KEY=12 THEN LOCATE N0,VERT,Q:POSITION N0,VERT:? CHR$(Q):RETURN
KW 1520 IF KEY<>54 AND KEY<>55 THEN 1505
```

continued ☛

FONT AND DISPLAY
DATA CREATOR

```
JL 1525 LOCATE N0,VERT,Q:REM ASCII IN Q
OE 1530 IF KEY=54 AND Q>127 THEN 1505
OU 1535 IF KEY=55 AND Q<128 THEN 1505
DB 1540 X=N0:CHANGE=-128:IF Q<128 THEN CHANGE=-CHANGE
EM 1545 LOCATE X,VERT,Q
HA 1550 VAR=SGN(CHANGE)
XW 1555 IF Q=ASC("/") THEN CHANGE=-CHANGE:GOTO 1570
LR 1560 IF Q=ASC(" ") THEN 1505
IE 1565 Q=Q+CHANGE:POSITION X,VERT:? CHR$(Q)
NO 1570 X=X+N1:GOTO 1545
MV 1575 REM THE 'SELECTED' FONT SECTION
FM 1580 DATA PAGE=152:GR.N0:POKE 82!N0:POKE 710!N0:POS.N0!N0:? "Reading Data For:";:TOP=PEEK(88)+PEEK(89)*256+17
SQ 1585 DATA >RESTORE #
XF 1590 DATA FOR I=1536 TO 1566:READ A:POKE I!A:NEXT I
MP 1595 DATA DAT.104!104!133!203!168!133!205!169!224!133!206
DY 1600 DATA DAT.104!133!204!162!4!177!205!145!203!200!208!249
PI 1605 DATA DAT.230!204!230!206!202!208!242!96
YE 1610 DATA RN=USR(1536!PAGE):REM COPY FONT TO PAGE*256
RX 1615 DATA >RESTORE #
GM 1620 DATA DIM FONT$(136):SET=PAGE*256:BASE=756
ET 1625 DATA >FONT$=#
LY 1630 DATA FOR CHAR=1 TO LEN(FONT$):POS.17!0
XL 1635 DATA Q=ASC(FONT$(CHAR!CHAR)):IF Q>26 AND Q<32 OR Q>124 THEN ? CHR$(27);
IF 1640 DATA ? CHR$(Q):MEM=SET+PEEK(TOP)*8:C=ASC(FONT$(CHAR!CHAR))
LM 1645 DATA FOR BYTE=N0 TO 7
NG 1650 DATA READ DAT:POKE MEM+BYTE!DAT
GG 1655 DATA NEXT BYTE
HZ 1660 DATA NEXT CHAR:POKE BASE!PAGE
GB 1665 DATA RETURN
AM 1670 REM THE 'WHOLE' FONT SECTION
LK 1675 DATA PAGE=152:SET=PAGE*256:BASE=756
RY 1680 DATA >RESTORE #
UM 1685 DATA GR.N0:POKE 752!1:POS.N0!N0:? "Constructing Font:":POKE 710!N0
ZO 1690 DATA FOR BYTE=N0 TO 1023 STEP 4:REM 1K FONT
FM 1695 DATA READ D0!D1!D2!D3:POS.18!0:? 1024-BYTE;"     "
OP 1700 DATA POKE SET+BYTE!D0:POKE SET+BYTE+1!D1:POKE SET+BYTE+2!D2:POKE SET+BYTE+3!D3
WH 1705 DATA NEXT BYTE:POKE BASE!PAGE
EU 1710 DATA RETURN
BY 1715 REM THE DISPLAY SCREEN SECTION
ZS 1720 DATA DIM DAT$(84)!LINE$(84)!P(4)!C$(2)!MOV$(80)
OB 1725 DATA >P(0)=#  :P(1)=#  :P(2)=#  :P(3)=#  :P(4)=#
FQ 1730 DATA >LENGTH=40*#
OX 1735 DATA >ROWS=#
GB 1740 DATA SIZE=ROWS*LENGTH
IS 1745 DATA BLANK=N0:IF ROWS<23 THEN BLANK=(8*(23-ROWS))
OX 1750 DATA DLIST=(PAGE-1)*256:DLHI=INT(DLIST/256):DLLO=DLIST-DLHI*256
WF 1755 DATA GR.N0:POKE 82!N0:POKE 710!N0:POS.N0!N0:? "Constructing Display List..."
DJ 1760 DATA AREA=SET-SIZE-256:DISP=AREA:ARHI=INT(AREA/256):ARLO=AREA-ARHI*256
XL 1765 DATA REM CREATE DISPLAY LIST
AW 1770 DATA POKE DLIST!112:POKE DLIST+1!112:POKE DLIST+2!112:D=ROWS:IF D>20 THEN D=20
TU 1775 DATA FOR COUNT=3 TO 3+BLANK:POKE DLIST+COUNT!N0:NEXT COUNT:REM RESERVE LINES
BW 1780 DATA FOR TIMES=COUNT TO COUNT+(3*D-1) STEP 3
US 1785 DATA POKE DLIST+TIMES!4+64:REM GRAPHICS 12(4)+LOAD.MEMORY.SCAN(64)
MM 1790 DATA POKE DLIST+TIMES+1!ARLO
BU 1795 DATA POKE DLIST+TIMES+2!ARHI
FB 1800 DATA ARLO=ARLO+LENGTH:IF ARLO>255 THEN ARLO=ARLO-256:ARHI=ARHI+1
NL 1805 DATA NEXT TIMES
NW 1810 DATA POKE DLIST+TIMES!65:POKE DLIST+TIMES+1!DLLO:POKE DLIST+TIMES+2!DLHI:REM END DISPLAY LIST
SB 1815 DATA >RESTORE #
LG 1820 DATA POS.N0!N0:? "Constructing Machine Code Routine...":FOR I=1 TO 80:READ DAT:MOV$(I)=CHR$(DAT):NEXT I
DV 1825 DATA DAT.104!104!133!204!104!133!203!104!133!213!104!133!212!104!133!109!104!133!108
AM 1830 DATA DAT.104!104!133!207!160!0!152!72!177!203!16!6!56!233!128!24!144!2!177!203!201!27
RE 1835 DATA DAT.144!20!201!32!176!12!152!72!169!27!32!176!242!104!168!24!144!4!201!125!176
PF 1840 DATA DAT.240!177!203!32!176!242!104!168!177!108!145!212!200!198!207!208!202!96
KB 1845 DATA REM STORE DISPLAY DATA
RT 1850 DATA >RESTORE #
UX 1855 DATA C$="01":? "Reading Display Data:-":MEM=PEEK(89)*256+PEEK(88)+(PEEK(84)*40):Y=PEEK(84)
XD 1860 DATA >READ DAT$:IF LEN(DAT$)<3 THEN #
YG 1865 DATA >IF DAT$(1!2)=C$ AND DAT$(LEN(DAT$)-1)=C$ THEN LINE$=DAT$:GOTO #
WU 1870 DATA >IF DAT$(1!2)=C$ THEN LINE$=DAT$:GOTO #
JY 1875 DATA >IF DAT$(LEN(DAT$)-1)=C$ THEN LINE$(LEN(LINE$)+1)="!":LINE$(LEN(LINE$)+1)=DAT$:GOTO #
LM 1880 DATA >LINE$(LEN(LINE$)+1)="!":LINE$(LEN(LINE$)+1)=DAT$:GOTO #
VA 1885 DATA LINE$=LINE$(3):LINE$=LINE$(1!LEN(LINE$)-2)
YM 1890 DATA POS.N0!Y
QK 1895 DATA X=USR(ADR(MOV$)!ADR(LINE$)!AREA!MEM!LEN(LINE$)):REM STORE DATA
ER 1900 DATA AREA=AREA+LEN(LINE$):POS.N0!Y:? CHR$(156);CHR$(156);CHR$(156)
WN 1905 DATA >IF AREA<>DISP+SIZE THEN GOTO #
YD 1910 DATA POKE 559!N0:REM DISPLAY OFF
HX 1915 DATA POKE 560!DLLO:POKE 561!DLHI:REM SET DISPLAY LIST
ZT 1920 DATA FOR C=N0 TO 4:POKE 708+C!P(C):NEXT C:REM SET COLOURS
SD 1925 DATA POKE BASE!PAGE
FE 1930 DATA RETURN
BH 1935 REM ADDRESS OF LAST LINE
PO 1940 MEM=PEEK(139)*256+PEEK(138):RETURN
```

FONT AND DISPLAY
DATA CREATOR

```
LU 100 REM ******************************
PI 110 REM *        FONT DEMO           *
EG 115 REM *     By Stephen Lakey       *
IP 120 REM * -------------------------- *
GN 125 REM *        LISTING 3           *
IR 130 REM * -------------------------- *
SV 135 REM * NEW ATARI USER - DEC 1992 *
MC 140 REM ******************************
RT 200 GOSUB 3000:REM Set Up Font
TP 250 GRAPHICS 0:POKE 756,PAGE
SF 260 LIST
OF 270 END
LS 2999 REM SET UP FONT SET
ST 3000 PAGE=152:GRAPHICS 0:POKE 82,0:POK
   E 710,0:POSITION 0,0:? "Reading Data F
   or:";:TOP=PEEK(88)+PEEK(89)*256+17
JG 3005 RESTORE 3010
EL 3010 FOR I=1536 TO 1566:READ A:POKE I,
   A:NEXT I
YX 3015 DATA 104,104,133,203,168,133,205,
   169,224,133,206
VA 3020 DATA 104,133,204,162,4,177,205,14
   5,203,200,208,249
LW 3025 DATA 230,204,230,206,202,208,242,
   96
DV 3030 RN=USR(1536,PAGE):REM COPY FONT T
   O PAGE*256
KD 3035 RESTORE 3200
CR 3040 DIM FONT$(136):SET=PAGE*256:BASE=
   756
UR 3045 FONT$(LEN(FONT$)+1)="0123456789"
TM 3050 FOR CHAR=1 TO LEN(FONT$):POSITION
    17,0
KY 3055 Q=ASC(FONT$(CHAR,CHAR)):IF Q>26 A
   ND Q<32 OR Q>124 THEN ? CHR$(27);
RC 3060 ? CHR$(Q):MEM=SET+PEEK(TOP)*8:C=A
   SC(FONT$(CHAR,CHAR))
XU 3065 FOR BYTE=0 TO 7
KO 3070 READ DAT:POKE MEM+BYTE,DAT
TN 3075 NEXT BYTE
AX 3080 NEXT CHAR:POKE BASE,PAGE
BT 3085 RETURN
NF 3200 DATA 124,198,230,214,206,198,124,
   0
ON 3202 DATA 24,56,120,24,24,24,254,0
TB 3204 DATA 254,6,6,254,192,192,254,0
SV 3206 DATA 254,6,6,254,6,6,254,0
GT 3208 DATA 192,192,192,204,204,254,12,0
QO 3210 DATA 254,192,192,254,6,6,254,0
LC 3212 DATA 254,192,192,254,198,198,254,
   0
JP 3214 DATA 254,12,12,24,24,48,48,0
JN 3216 DATA 124,198,198,124,198,198,124,
   0
AO 3218 DATA 254,198,198,254,6,6,254,0
```

Listing 3 - redefining characters

FONT AND DISPLAY
DATA CREATOR

Listing 4 - the start of a game

```
LU 100 REM ******************************
ZZ 110 REM *       DISPLAY DEMO         *
EG 115 REM *     By Stephen Lakey       *
IP 120 REM * -------------------------- *
HO 125 REM *        LISTING 4           *
IR 130 REM * -------------------------- *
SV 135 REM * NEW ATARI USER - DEC 1992 *
MC 140 REM ******************************
UE 200 GOSUB 28000:REM Set Up Font
JH 210 GOSUB 25000:REM Set Up Display
PU 220 POKE 559,34:REM Display On
OE 250 GOTO 250
EM 24999 REM THE MAIN GAME DISPLAY
KR 25000 DIM DAT$(84),LINE$(84),P(4),C$(2
   ),MOV$(80)
TG 25005 P(0)=224:P(1)=226:P(2)=229:P(3)=
   230:P(4)=0
GO 25010 LENGTH=40*1
JZ 25015 ROWS=20
XY 25020 SIZE=ROWS*LENGTH
OY 25025 BLANK=N0:IF ROWS<23 THEN BLANK=(
   8*(23-ROWS))
EF 25030 DLIST=(PAGE-1)*256:DLHI=INT(DLIS
   T/256):DLLO=DLIST-DLHI*256
BA 25035 GRAPHICS N0:POKE 82,N0:POKE 710,
   N0:POSITION N0,N0:? "Constructing Disp
   lay List..."
NE 25040 AREA=SET-SIZE-256:DISP=AREA:ARHI
   =INT(AREA/256):ARLO=AREA-ARHI*256
UF 25045 REM CREATE DISPLAY LIST
KU 25050 POKE DLIST,112:POKE DLIST+1,112:
   POKE DLIST+2,112:D=ROWS:IF D>20 THEN D
   =20
JH 25055 FOR COUNT=3 TO 3+BLANK:POKE DLIS
   T+COUNT,N0:NEXT COUNT:REM RESERVE LINE
   S
WR 25060 FOR TIMES=COUNT TO COUNT+(3*D-1)
    STEP 3
SB 25065 POKE DLIST+TIMES,4+64:REM GRAPHI
   CS 12(4)+LOAD.MEMORY.SCAN(64)
JH 25070 POKE DLIST+TIMES+1,ARLO
AE 25075 POKE DLIST+TIMES+2,ARHI
SO 25080 ARLO=ARLO+LENGTH:IF ARLO>255 THE
   N ARLO=ARLO-256:ARHI=ARHI+1
ZX 25085 NEXT TIMES
EP 25090 POKE DLIST+TIMES,65:POKE DLIST+T
   IMES+1,DLLO:POKE DLIST+TIMES+2,DLHI:RE
   M END DISPLAY LIST
LB 25095 RESTORE 25100
VY 25100 POSITION N0,N0:? "Constructing M
   achine Code Routine...":FOR I=1 TO 80:
   READ DAT:MOV$(I)=CHR$(DAT):NEXT I
GA 25105 DATA 104,104,133,204,104,133,203
   ,104,133,213,104,133,212,104,133,109,1
   04,133,108
SH 25110 DATA 104,104,133,207,160,0,152,7
   2,177,203,16,6,56,233,128,24,144,2,177
   ,203,201,27
FF 25115 DATA 144,20,201,32,176,12,152,72
   ,169,27,32,176,242,104,168,24,144,4,20
   1,125,176
BT 25120 DATA 240,177,203,32,176,242,104,
   168,177,108,145,212,200,198,207,208,20
   2,96
LS 25125 REM STORE DISPLAY DATA
NK 25130 RESTORE 25250
LV 25135 C$="01":? "Reading Display Data:
   -":MEM=PEEK(89)*256+PEEK(88)+(PEEK(84)
   *40):Y=PEEK(84)
OL 25140 READ DAT$:IF LEN(DAT$)<3 THEN 25
   160
KK 25145 IF DAT$(1,2)=C$ AND DAT$(LEN(DAT
   $)-1)=C$ THEN LINE$=DAT$:GOTO 25165
CK 25150 IF DAT$(1,2)=C$ THEN LINE$=DAT$:
   GOTO 25140
DD 25155 IF DAT$(LEN(DAT$)-1)=C$ THEN LIN
   E$(LEN(LINE$)+1)=",":LINE$(LEN(LINE$)+
   1)=DAT$:GOTO 25165
YE 25160 LINE$(LEN(LINE$)+1)=",":LINE$(LE
   N(LINE$)+1)=DAT$:GOTO 25140
ES 25165 LINE$=LINE$(3):LINE$=LINE$(1,LEN
   (LINE$)-2)
PM 25170 POSITION N0,Y
BN 25175 X=USR(ADR(MOV$),ADR(LINE$),AREA,
   MEM,LEN(LINE$)):REM STORE DATA
JD 25180 AREA=AREA+LEN(LINE$):POSITION N0
   ,Y:? CHR$(156);CHR$(156);CHR$(156)
KS 25185 IF AREA<>DISP+SIZE THEN GOTO 251
   60
PL 25190 POKE 559,N0:REM DISPLAY OFF
ED 25195 POKE 560,DLLO:POKE 561,DLHI:REM
   SET DISPLAY LIST
```

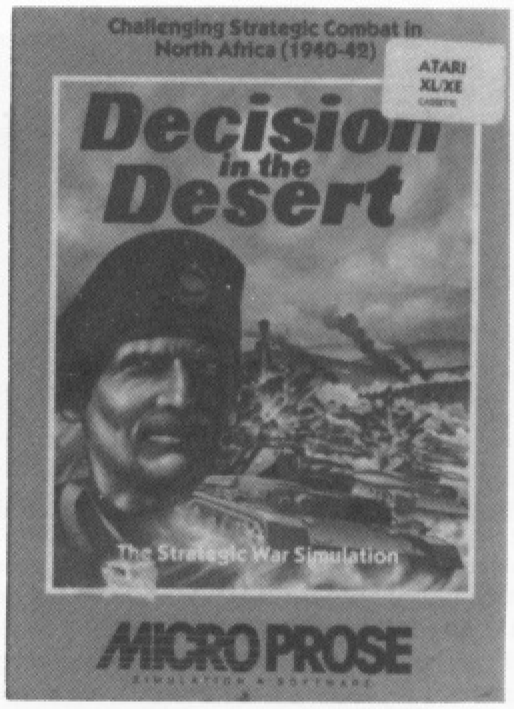
continued

FONT AND DISPLAY
DATA CREATOR

Listing 4 continued

```
OP 25200 FOR C=N0 TO 4:POKE 708+C,P(C):NE
   XT C:REM SET COLOURS
FL 25205 POKE BASE,PAGE
DS 25210 RETURN
DK 25250 DATA 01          ◂              ◂
    ◂        ◂                    ◂      ◂
         ◂                 01
XO 25252 DATA 01 ◂          ◂
                 ◂
                           01
PI 25254 DATA 01          ◂                  ◂
          ◂
                           01
KS 25256 DATA 01            ◂         ◂
    ◂                wwwwwwwwwwwwwwwwwwwwwwwww
   wwwwwwwwwwwwwwwwwww01
SL 25258 DATA 01                            ◂
                         ▪──────_
                          ◂01
IE 25260 DATA 01          ▪rrrrr✦    ◂         ◂
                      ┐/\◂   ◣▪▪▪▪▪         ▟ ┴└
   ξ↑↓←→bdf   ◂            01
XE 25262 DATA 01H┤┤pqtu◢pqt◢upqt─┼●┬┬┤ ┬┬┬
   ┬┬●┬┬┬yhupqtpqqt▸▸▸▸▸▸▸▸▸▸▸▸▸▸▸▸▸jknjjjk
   kjjkkkkkj▸▸▸▸▸▸▸▸01
IJ 25264 DATA 01./+./,//LM/.++,./LM+/+/--
   :;<,++,/,+/,///-,,LM-:;<,+,LM--♥\_____\
   ├->?@/$%-+-:;<-/-01
JU 25266 DATA 01:;<+EF>?@:;<+++QRYZ |▛ [UT
   **++:;<*=>?@*+*>?@ABCD'=>?@EF+N0000000
   OP&:;<>?@EF'&:;<'01
FE 25268 DATA 01&$GHIJK$#,-ABCD#&((&:;<-,
   =>?@+*ABCD=>?@E!:;<##!"#$GHIJK!$#"=>?@
   :;<!!!"GHIJK!#"AB01
XO 27999 REM FONT SET FOR MAIN DISPLAY
YE 28000 PAGE=152:SET=PAGE*256:BASE=756
MK 28005 RESTORE 28200
ED 28010 GRAPHICS N0:POKE 752,1:POSITION
   N0,N0:? "Constructing Font:":POKF 710,
   N0
PF 28015 FOR BYTE=N0 TO 1023 STEP 4:REM 1
   K FONT
BI 28020 READ D0,D1,D2,D3:POSITION 18,0:?
    1024-BYTE;"    "
MZ 28025 POKE SET+BYTE,D0:POKE SET+BYTE+1
   ,D1:POKE SET+BYTE+2,D2:POKE SET+BYTE+3
   ,D3
HK 28030 NEXT BYTE:POKE BASE,PAGE
EZ 28035 RETURN
MF 28200 DATA 0,0,0,0,0,0,0,0,170,138,170
   ,226,168,154,168,138
TP 28202 DATA 170,138,170,34,175,106,186,
   165,166,202,168,163,42,186,169,226
WP 28204 DATA 170,162,170,107,170,162,106
   ,170,178,232,170,170,174,170,168,234
SX 28206 DATA 168,234,170,170,138,169,170
   ,234,170,186,170,168,170,234,166,170
HY 28208 DATA 170,162,170,171,170,42,170,
   166,170,234,170,154,170,170,169,162
OO 28210 DATA 170,186,170,171,106,170,169
   ,170,170,106,170,138,170,186,169,170
TU 28212 DATA 170,170,154,170,168,170,110
   ,170,170,170,234,170,170,166,170,170
UO 28214 DATA 170,170,170,174,170,170,106
   ,170,234,170,170,170,166,170,170.170
CA 28216 DATA 0,0,0,252,204,136,136,84,0,
   0,0,48,240,32,32,84
TF 28218 DATA 0,0,0,252,12,168,128,84,0,0
   ,0,252,12,168,8,84
KL 28220 DATA 0,0,0,192,192,136,168,4,0,0
   ,0,252,192,168,8,84
XH 28222 DATA 0,0,0,252,192,168,136,84,0,
   0,0,252,12,32,32,64
GN 28224 DATA 0,0,0,252,204,168,136,84,0,
   0,0,252,204,168,8,84
LE 28226 DATA 169,168,172,173,185,185,229
   ,228,10,0,0,0,0,64,84,69
RT 28228 DATA 170,170,42,42,10,10,18,82,1
   68,152,42,170,234,170,46,170
PX 28230 DATA 213,209,169,170,170,170,104
   ,174,85,69,81,25,170,170,170,170
CX 28232 DATA 82,84,68,102,170,170,170,17
   0,172,174,185,185,185,228,228,224
QM 28234 DATA 0,64,64,80,20,21,85,85,0,0,
   0,0,0,64,84,21
YQ 28236 DATA 170,42,42,26,10,10,18,82,17
   0,170,170,170,170,170,128,0
FK 28238 DATA 170,170,170,170,170,170,42,
   2,171,47,190,185,165,170,226,169
UW 28240 DATA 145,81,69,21,20,169,106,163
   ,81,81,69,69,53,161,138,171
CM 28242 DATA 17,17,17,16,36,168,186,168,
   82,80,84,68,101,41,186,171
PC 28244 DATA 170,168,160,184,185,229,229
   ,166,170,42,10,2,0,84,84,17
QM 28246 DATA 143,15,63,0,63,42,21,0,255,
   255,255,0,255,170,85,0
FO 28248 DATA 241,240,252,0,252,168,84,0,
   170,168,168,168,163,163,163,143
VA 28250 DATA 63,255,255,255,255,255,255,
   255,255,255,255,255,255,255,255,255
NH 28252 DATA 170,42,42,42,202,202,202,19
   4,252,255,255,255,255,255,255,255
CU 28254 DATA 170,42,170,174,170,128,63,6
   3,107,170,186,170,169,0,255,0
RS 28256 DATA 170,168,170,233,170,2,252,2
   52,252,252,252,252,241,241,193,192
ZD 28258 DATA 85,85,85,85,85,85,85,0,63,6
   3,63,63,79,79,79,3
QH 28260 DATA 170,170,170,170,0,255,255,2
   55,255,255,255,255,255,255,255,255
XN 28262 DATA 170,170,170,170,0,255,255,2
   52,170,170,170,170,0,255,255,0
EZ 28264 DATA 170,170,170,170,128,143,63,
   63,170,170,170,170,2,240,252,252
ZH 28266 DATA 85,85,85,85,85,85,85,0,85,8
   5,85,85,85,85,85,0
SY 28268 DATA 255,85,255,63,42,162,81,81,
   240,175,90,245,175,90,245,175
UG 28270 DATA 0,0,240,175,90,245,175,90,0
   ,0,0,0,192,176,108,219
GA 28272 DATA 52,52,52,52,52,54,118,118,2
   55,255,85,170,207,207,170,85
MB 28274 DATA 125,125,125,126,127,127,106
   ,85,125,125,125,125,125,125,125,125
QR 28276 DATA 85,126,127,127,125,125,125,
   125,85,171,207,207,170,85,255,255
EX 28278 DATA 85,189,253,253,189,125,125,
   125,125,125,125,189,253,253,169,85
BQ 28280 DATA 125,125,125,125,125,125,125
   ,125,255,255,255,255,255,255,255,255
PV 28282 DATA 0,0,64,80,148,85,90,160,0.0
   ,0,15,48,213,170,0
AN 28284 DATA 3,60,192,0,0,85,170,0,0,0,0
   ,0,0,3,60,192
SC 28286 DATA 0,0,3,60,192,0,0,0,0,0,0,0,
   0,85,170,0
AP 28288 DATA 96,108,99,96,96,96,96,96,96
   ,96,96,96,96,101,106,96
NP 28290 DATA 0,0,192,63,0,0,0,0,0,0,0,0,
   192,63,0,0
GC 28292 DATA 0,0,0,0,0,0,255,0,0,0,0,0,3
   ,252,0,0
FQ 28294 DATA 0,0,3,252,0,0,0,0,6,54,198,
   6,6,6,6,6
IX 28296 DATA 6,6,6,6,6,86,166,6,0,0,0,25
   2,204,168,136,68
WT 28298 DATA 0,192,60,3,0,0,0,0,0,0,0,25
   2,192,128,128,84
HG 28300 DATA 0,0,0,0,192,60,3,0,0,0,0,25
   2,192,168,128,84
ED 28302 DATA 0,0,0,0,0,0,0,192,0,0,0,252
   ,204,168,8,84
GB 28304 DATA 0,0,192,48,60,84,170,5,0,0,
   0,252,48,32,32,84
IJ 28306 DATA 61,63,128,170,170,170,170,1
   70,247,255,195,40,170,170,170,170
XX 28308 DATA 0,0,0,192,192,128,128,84,0,
   0,0,204,252,136,136,68
TU 28310 DATA 125,204,34,170,170,170,170,
   170,0,0,0,252,204,136,136,84
CD 28312 DATA 1,9,41,41,169,165,169,165,6
   4,66,82,154,90,86,102,85
QM 28314 DATA 0,0,0,252,204,168,160,68,0,
   0,0,252,192,168,8,84
CV 28316 DATA 144,144,164,148,213,149,166
   ,154,0,0,4,20,21,165,149,149
EY 28318 DATA 0,0,0,204,204,136,168,16,0,
   0,255,170,85,0,0,0
JD 28320 DATA 252,252,252,240,243,195,207
   ,207,60,3,0,0,0,85,170,0
ZV 28322 DATA 170,170,170,170,170,170,170
   ,170,204,204,204,204,207,207,207,207
UP 28324 DATA 255,255,255,63,63,15,207,20
   7,0,126,120,124,110,102,6,0
EI 28326 DATA 0,0,0,0,12,0,0,0,255,85,170
   ,170,170,170,170,170
```

DESERT WARFARE



Steven Wilds braves the dust of the North African desert

On the tenth of June 1940, Italy declared war on Britain. Mussolini, eager to cash in on the "certain" Axis victory ordered his forces in Africa to march into Egypt and lay the foundations for a new Roman Empire. The Italian army were slow to act on their leaders wishes and even though they vastly outnumbered the British, they soon began to lose men, machines and territory. As the Italians suffered defeat after defeat, the Germans, under General Erwin Rommel, intervened. The British were suddenly exchanging blows with Nazi forces and Africa became a testing ground for the Allies. What for the Germans had started as an operation to help the Italians, changed into an offensive and then into a disaster that had to be avoided at all costs. For the British, the "Decision in the Desert" was the turning point. As Churchill said himself; "... before El Alamein we never won a battle, after El Alamein we never lost a battle."

Both Allied and Axis forces realised the potential for fast and highly mobile warfare. This is reflected in the five game scenarios in Decision In The Desert where you will be commanding small units over vast areas of terrain. The combat system is the same throughout the entire Microprose Command Series and so once mastered is easy to use. Some may prefer a series of turns and phases but the game contains enough detail to keep even the most experienced wargamer quiet. The manual is again of excellent quality and is essential for both copy protection and for giving you the historical information required to enjoy the game to its fullest.

I had hoped not to include a run-down of each scenario (for fear of copying the Conflict in Vietnam review) but now feel that to do so would do the game a great injustice, so here they are:

THE SCENARIOS

SIDI BARRANI: BRITISH BLITZ - At dawn on December 9th, 1940, British forces under General O'Connor surround and assault fortified Italian positions set up after the half-hearted advance into Egypt. The British chase the Italians into Libya where they finally surrender at Beda Fomm. This scenario simulates the opening British moves but one variant allows you to go all the way to Tobruk! Why not try commanding the Italian units?

OPERATION CRUSADER - Rommel has not only stopped the entire collapse of the Italian army but has also forced the British back to the border. However Tobruk stays firm and Rommel is forced to halt his advance. Now on the defensive, his units strike out against mounting British forces but after a month long build up, the British launch a major attack around the desert flank. A month long battle follows and the British prevail. Could you alter the course of history?

GAZALA: ROMMEL'S FINEST HOUR - Driven back by Operation Crusader Rommel doesn't wait to launch a second offensive. The British are swept back to just fifty miles west of Tobruk where both sides dig in. Rommel prepares for an offensive whilst the British build a series of elaborate defences. After three months Rommel strikes, swinging south of the British defences and smashing into the British rear. Caught between unbroken fortifications Rommel has to wait until the Italian infantry clear a path through the minefields. A very tough one. Could you do better than the British High Command and stop Rommel at the last minute?

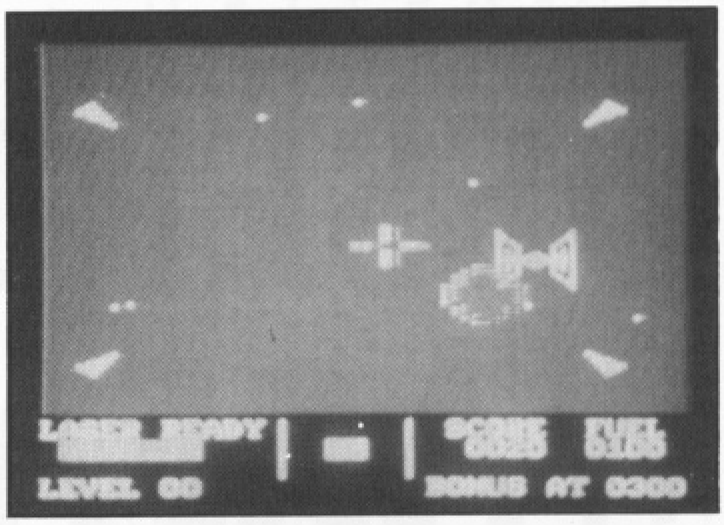
FIRST ALAMEIN: END OF THE BEGINNING - Rommel decides to strike deep into Egypt instead of building up his forces for an assault on Malta. The British take advantage of the Qattara depression and begin to build up a series of defences that cannot be flanked. Rommel orders his men on relentlessly and they reach El Alamein shortly after the retreating British. Not waiting for fresh units to arrive, Rommel throws his men into a final assault on El Alamein. They fail and he spends a month fighting off British attacks. Finally mutual exhaustion causes a stale mate. This was the last great mobile desert battle.

ALAM EL HALFA: BEGINNING OF THE END - Both sides wait for reinforcements but German supply lines are under constant attack. Rommel is in a logistical war he can't win and strikes before it is too late. Rommel's men drive deep into the British left flank but come across a lateral line of defence based on the Alam El Hafa Ridge. The British refuse to leave their defences and the Germans have to press home attack after attack. After three days Rommel sees its all over and orders the withdrawal. Try the variant "Rommel's Dream" and see the battle unfold the way Rommel wanted it to.

Microprose have been able to incorporate the same combat system into each of their Command Series games and yet each game remains very different from the rest. Another brilliant, well put together game from Microprose that will keep you and your Atari going for weeks. Miss this and you'll have to kick yourself!

DECISION IN THE DESERT is available from The Accessory Shop - check the Accessory Shop section in this issue

STAR FIRE & ZAND'S LABYRINTH



Cassette-based users have been patiently waiting for something new to arrive ever since the budget game manufacturers dropped Atari in favour of more profitable ventures. Now Excel have responded by porting several games from their disk-mags (reviewed elsewhere in this issue) onto tape.

Star Fire is basically a simplified version of the all-time-classic, Star Raiders. Needless to say your view is a scrolling starscape which gives the impression you are boldly going forth where no man (or woman) has gone before. Alien tie fighters periodically try to attack your ship but you can retaliate by lining them up in your sights and blasting them into space dust. Your laser has a tendency to overheat so you should try not to miss too often! Each fighter you destroy is worth a specific quantity of points depending on its colour whilst a 'triad' mothership is a particularly valuable target. The game is played over a series of increasingly demanding levels and each one has an associated minimum score that will permit you to enter the next. The catch is that you have to achieve this goal before the fuel expires.

Just in case you tire of zapping aliens, there's another game on the reverse side of the tape called Zand's Labyrinth. This one originates from Germany but isn't difficult to understand as it's based on one of the very early game concepts. On each level you're presented with a maze and your joystick manoeuvres a snake whose aim is to gobble up various goodies positioned around the screen. As well as ensuring you obtain these before the bonus timer hits zero, you must try not to collide with your snake's tail. Whenever the snake consumes an item it's tail becomes longer so it's more difficult to avoid. Eventually a gate opens at the base of the screen and you can slither through to the next level. The game has an option for two players to take turns and there's a choice of various skill settings.

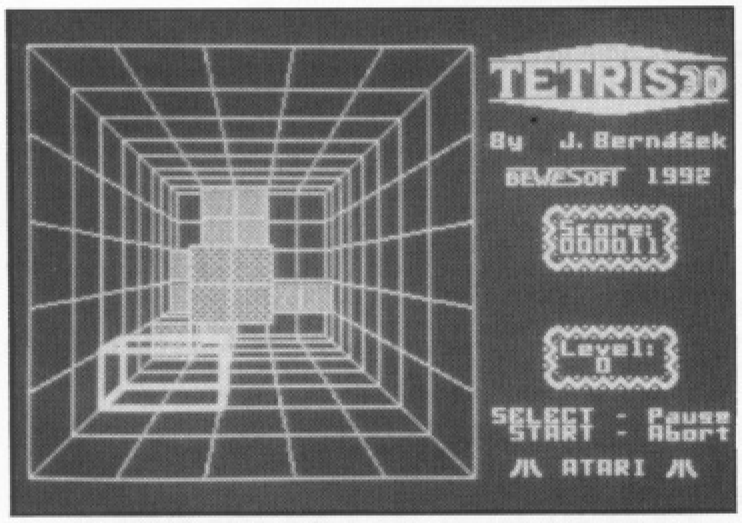
The graphics and musical effects in Zand's Labyrinth are extremely high quality and put to shame most commercial releases of the late 1980s. Star Fire doesn't rate far behind - indeed, both are well constructed, addictive and enjoyable games that are worth adding to any arcade collection.

If you're a long-suffering cassette user you simply can't afford to miss them.

Title:	**STAR FIRE & ZAND'S LABYRINTH**
Supplier:	**Excel**
Price:	**£3**
Format:	**Cassette**

Reviewed by Paul Rixon

TETRIS 3D & CHESS



Excel have come to the rescue of cassette-based users with some terrific games that have only recently surfaced in the UK.

Unless you're new to the computing world, you must be familiar with Tetris - the Russian-designed game that has enjoyed great success on all popular micros. In the basic game you have to position descending blocks so that when they settle, completely solid rows are formed which disappear to create space for the subsequent layers.

TETRIS 3-D takes this idea one step further - instead of viewing the blocks side-on you find yourself peering downwards into a deep square hole. The blocks materialise in front of you and fall away towards the distant base of the hole. As before the aim is to manoeuvre the blocks in flight so that they drop into a neatly ordered position, leaving no gaps on each layer. If you don't succeed the pile soon stacks up towards you and leaves insufficient room for the next block to fall, so the game must be aborted. Keyboard or joystick controls can be redefined to suit personal preference. The graphics use the highest resolution available and are therefore vector-based with various shading effects to indicate the different layers. The game seems very similar to the 3D-Tetris I've seen on PC machines, but I'm pleased to say that the Atari's graphics are superior!

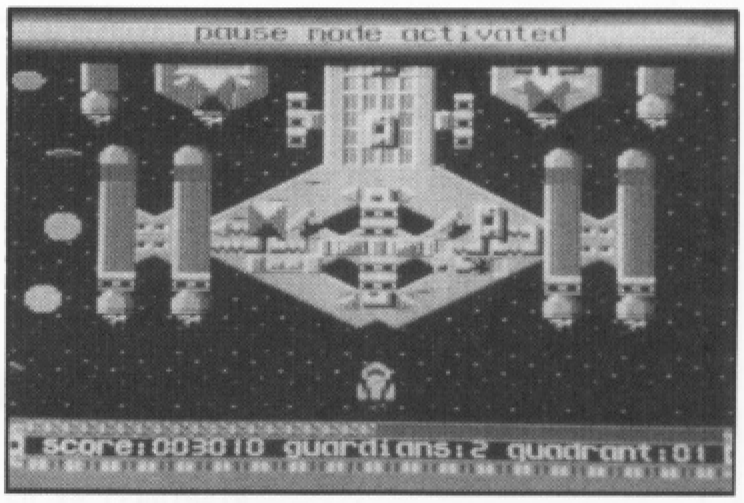
CHESS is a straightforward implementation of this much simulated game. It includes more features than first seem apparent, and the lack of instructions means that some experimental key pressing is required to discover what they are! Some examples are edit mode - enabling you to set the board however you like - and automatic mode, which instructs the computer to play itself. You can input moves via joystick or keyboard cursor keys - both methods involve using a highlight cursor to point at the desired start and finish position of the piece in question. The board is displayed from a birds-eye perspective and the pieces are easy to distinguish, unlike some other simulations I could mention. Chess games are normally measured by their playing strength but the fact is that most people have to disable the computer's processing power in order to have any chance of winning! This one has eight levels and should therefore suit a reasonable range of abilities. Due credit to Excel for distributing some more excellent software.

It must be Christmas!

Title:	**TETRIS 3D & CHESS**
Supplier:	**Excel**
Price:	**£3**
Format:	**Cassette**

Reviewed by Paul Rixon

THE LAST GUARDIAN



Have you ever wondered what happens to games that are supposedly due for release but then withdrawn when the company concerned pulls out of the market or disappears altogether? The answer is that they are usually left on the shelf, quite literally, and stay there indefinitely unless an enterprising individual decides to purchase the publishing rights. Take as an example THE LAST GUARDIAN, which Tynesoft commissioned just before they abandoned 8-bit machines and subsequently crashed into non-existence! The exciting news is that Micro Discount have tracked down the rights, reproduced the artwork and finally brought The Last Guardian into public circulation.

The game is essentially a vertical scroller in a similar vein to Thunderfox and Mirax Force. Your mission is to fly The Last Guardian space fighter over an alien warship and annihilate as many ground installations and enemy craft as you can. You must try to avoid contact with these nasties or they soon diminish your shield strength. You should also be wary of radar pylons as these can't be removed and are deadly if you fly too close. It's a tad frustrating as you only have two ships in reserve and are forced to restart at the beginning if you lose them both. You must strafe the warship five times before a mothership arrives to transport you into the next quadrant. At the end of each run there's an asteroid belt to contend with and more waves of alien aggressors. Each time you zap one there's a good chance that a bonus object will be left in its place. Double canons and turbo boosters are obviously worth having but electromagnets which attract aliens and instant death anti-matter are preferably left alone!

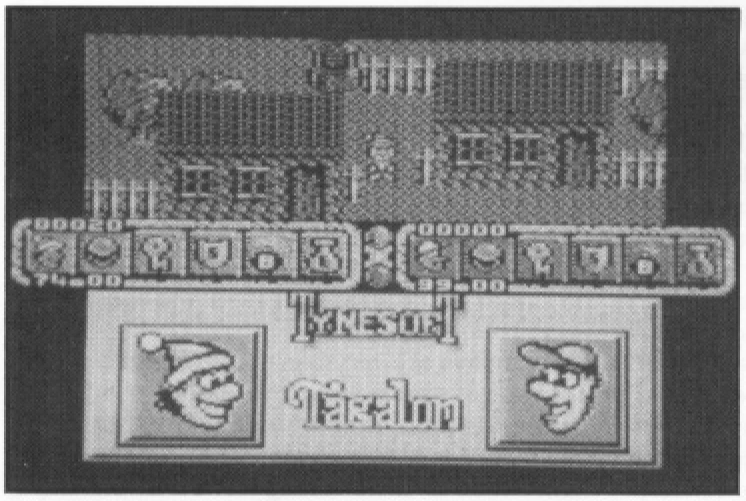
The Last Guardian is graphically stunning. Everything about the game - from the intro screen to the warship's fittings - has been designed with an eye for detail and a highly professional finish. All appears to be clear, colourful and detailed. It's a pity that the first stage is so tricky that less persevering players may give up before they sample the treats in store on higher levels. Sound? Well, it's not bad at all and you'll even hear some digitised speech at the start of each session.

This is a brilliant game and it's marvellous news that it's finally seen the light of day. It must surely be the highlight of 1992!

Title:	**THE LAST GUARDIAN**
Supplier:	**Micro Discount**
Price:	**£5.95/£4.95**
Format:	**Disk/cassette**

Reviewed by Paul Rixon

TAGALON



Here's another brand new game from Micro Discount resulting from their recent acquisition of the rights to publish former Tynesoft programs. Like The Last Guardian, TAGALON failed to make it to the final production stage before Tynesoft's demise. The game comes from Ivan Mackintosh who, you may recall, has been responsible for excellent Red Rat titles such as Crumble's Crisis. As before there is musical accompaniment from Richard Munns, who certainly knows a thing or two about Pokey!

Tagalon is an arcade adventure for one or two players, though it's especially suited to the latter. The adventure is set in the village of Tagalon with its huts, trees, wells and other typical village landmarks. Your instructions are to collect some marbles (wonder who's lost them?) and ultimately find a room with a magic purple bed, which is located somewhere in the depths of a hazardous castle. As you wander through the village you'll meet lots of nasty characters who seem to be intent on sapping your energy, so it's best to step aside when you can. As luck would have it, there are magic spells lying on the ground and you can grab these to invoke some useful powers. Shields will briefly protect you from the baddies whilst a bomb makes certain they won't come back. Keys are required once you enter the castle, since locked doors abound here.

The single player game is quite addictive but the game comes alive in two player mode, when the screen splits into two halves giving each participant an individual view of the proceedings. It then becomes a frantic race to obtain the numerous spells and marbles before the opposition does likewise! The graphics could be clearer in places but they are generally very good, particularly after you arrive at the castle. The continuous music (rather like Jet Set Willy) may begin to get on your nerves after a while and a silent option might have been a good idea. Not to worry - most monitors have a volume control!

There are not many 'true' two player games in existence but this one is the real thing! Tagalon is a quality product and, above all, is enjoyable to play. At last the software drought could be ending and with sufficient interest from 8-bit owners, Micro Discount are all set to release many more goodies like this. It's time to show your appreciation.

Title:	**TAGALON**
Supplier:	**Micro Discount**
Price:	**£5.95/£4.95**
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Reviewed by Paul Rixon

NUMBER SORTING

A machine code routine giving lightning speed number sorting by Andrew Martin

Ever since I first bought an ATARI computer many aeons ago I have never seen a machine code number sort routine that can easily be used with BASIC, so I created my own.

It allows full use of numerical arrays to store the numbers to be sorted. Other numerical or string arrays related to the sort array can be moved too. It takes about 3.5 seconds to sort 500 numbers upwards or downwards. The program was designed for use with ATARI BASIC and will run with any version. I have not used any other Basic, but it should work with BASIC XL or XE although the program uses many page zero locations and other BASIC's may use these memory locations themselves.

The sorting is achieved by a technique called 'Shell Sort' where a constant D is set to half the total number, N, to be sorted. This divides the list into two parts and sorts the top item of the top half with that at the top of the bottom half. This continues down the list for N/2 times until the top half has been sorted with the bottom half. D is divided in half and this divides the list into 4 halves and the same procedure as before applies. This continues until D=1 and the list is completely sorted.

The Basic program of the shell sort is shown in Program 1.

USING IN YOUR OWN PROGRAMS

The sort utility has been programmed to sit in your BASIC program without your having to keep track of where the machine code is located. This is done using a string array to store the code and a simple technique to execute it using the USR function.

The string variable can be stored using the LIST command, and be incorporated into any BASIC program using the LIST command.

The sort utility will be executed by :-

```
A=USR(ADR(S$),UPDOWN,ASC("N"),NUM,ASC("A"),A,etc.,etc.)
```

Program 2 creates this string. Type this in and save it before running, using SAVE"C:" or SAVE "D:CREATE.BAS"

The program adds some lines when run and this is the sort string.

These extra lines must be saved so they can be included into any BASIC program. Do this by LIST "C:",10000,19999 or LIST "D:SORT2.LST",10000,19999

Program 3 shows you how to use the sort utility. Type this in and save it before running. The sort string created by program 2 must now be entered for it to work. Do this by ENTER"C:" or ENTER "D:SORT2.LST"

HOW FAST?

Run the program and see how quickly it sorts numbers. Change line 10 for a different number of numbers to sort (NUM) and change line 20 to sort UP or DOWN (UPDOWN).

All the numbers to be sorted are stored in the numerical array N, any single character numerical array can be used, but don't forget to change line 310 accordingly. This is the third term in the USR function and must have the ASC function around it.

Other arrays to be moved according to the sort array are added after the sort array and number in the USR function (term 5 onwards). The single character array must be enclosed around the ASC function and an identifier, A, added after it. For a numerical array A must be 168. For a string array A must be set to the length of the string per item and must be less than 128.

Atari BASIC's string arrays are very basic and don't leave much in the way of ease of use. A technique can be used to allow strings to be used to a pre-defined length. Program 4 uses a string array of 12 items with a string length of 10 characters per item. Sections of the string can be output using a very simple technique. Each of the substrings take up a full 10 characters, every 10 characters along the string with spaces taking up any spare room. Line 220 uses ? A$(I*10-9,I*9) to display the Ith item.

If the string length per item is changed to 20, then the following changes will be made to program 3.

```
30 LENGTH=20
220 ?A$(I*20-19,I*20)
```

The string array of line 150 will have to be changed to take account of the extra spacing.

Play around with the program to see how it works and then you'll be able to put string arrays to better use in your own programs. This will allow you to fully use the numerical and string arrays in the sort utility.

Happy number crunching.

```
EX 1 REM ######################################
IT 2 REM #       NUMBER SORTING               #
LN 3 REM #  ------------------------          #
VA 4 REM #          PROGRAM 1                 #
QR 5 REM #     THE BASIC SHELL SORT           #
FC 6 REM ######################################
RO 9 N=10
MV 10 DIM L(N),T(N)
MT 20 FOR I=1 TO N:L(I)=INT(RND(0)*100):NEXT I
OZ 30 GOSUB 300
ZC 100 D=INT(N/2)
YG 110 IF D<1 THEN GOSUB 300:END
ER 120 F=0
RD 130 GOSUB 200
SO 140 IF F=1 THEN 120
VG 150 D=INT(D/2)
MD 160 GOTO 110
BL 200 FOR I=1 TO N-D
BU 210 IF L(I)>=L(I+D) THEN 260
QH 220 T=L(I)
VE 230 L(I)=L(I+D)
VA 240 L(I+D)=T
FF 250 F=1
GE 260 NEXT I
ZM 270 RETURN
GM 300 FOR I=1 TO N:? I,L(I):NEXT I:?
ZB 310 RETURN
```

```
EX 1 REM ######################################
MA 2 REM #       NUMBER SORTING               #
QA 3 REM #  ----------------------            #
LG 4 REM #          PROGRAM 4                 #
GY 5 REM # To show the use of string          #
HR 6 REM # arrays for storing data            #
FD 7 REM ######################################
NN 8 REM
CB 10 REM Set up program variables
YI 20 ITEM=12
GO 30 LENGTH=10
WE 100 REM Dimension string array
LD 110 DIM A$(ITEM*LENGTH)
TR 140 REM Set up data in string array
XQ 150 A$="January   February  March     April     May       June      July      August    September October   "
QZ 160 A$(LEN(A$)+1)="November  December  "
QB 200 REM Output string array to screen
JM 210 GRAPHICS 0:FOR I=1 TO ITEM
VM 220 ? A$(I*10-9,I*10)
FY 230 NEXT I
NZ 240 END
```

```
NO 1 REM ******************************
DI 2 REM *         USING  THE         *
PT 3 REM *        MACHINE CODE        *
TF 4 REM *         NUMBER  SORT       *
KQ 5 REM *      by Andrew Martin      *
SS 6 REM * -------------------------- *
MN 7 REM * NEW ATARI USER -  DEC 1992 *
WV 8 REM ******************************
NO 9 REM
AT 10 NUM=50
QH 20 UPDOWN=0
AQ 100 GRAPHICS 0:POKE 82,0:DIM N(NUM),A(NUM),B$(NUM*4)
GZ 110 DIM S$(742):GOSUB 10000
RB 120 GOSUB 200
YJ 125 ? :? "UNSORTED NUMBERS:-"
RZ 130 GOSUB 400
RQ 140 GOSUB 300
MI 145 ? :? "FIRST SORTED NUMBERS:-"
SD 150 GOSUB 400
AN 155 UPDOWN= NOT UPDOWN
RU 160 GOSUB 300
NG 165 ? :? "SECOND SORTED NUMBERS:-"
SH 170 GOSUB 400
PJ 199 END
NR 200 ? ,"←←PROCESSING RANDOM NUMBERS"
HX 210 FOR I=1 TO NUM
LE 220 N(I)=INT(RND(0)*10000)-5000:A(I)=I
RT 230 FOR J=0 TO 3:B$(I*4-J,I*4-J)=CHR$(64+I):NEXT J
GA 240 NEXT I
ZI 250 RETURN
VH 300 ? :? CHR$(253);"SORTING NUMBERS"
YN 310 A=USR(ADR(S$),UPDOWN,ASC("N"),NUM,ASC("A"),168,ASC("B"),4)
LG 320 ? CHR$(253);"SORTING FINISHED "
ZS 330 IF A=0 THEN ? "SORTING ERROR, CAN'T FIND NUMERIC STRING"
ZH 340 RETURN
HX 400 FOR I=1 TO NUM
WT 410 ? A(I);":";B$(I*4-3,I*4);":";N(I),
HO 420 NEXT I:?
ZG 430 RETURN
GA 10099 RETURN
```

NUMBER SORTING

```
WO 1 REM ********************************
PS 2 REM *        MACHINE CODE          *
TE 3 REM *        NUMBER  SORT          *
UL 4 REM *      CREATOR  UTILITY        *
KQ 5 REM *      by Andrew Martin        *
SS 6 REM * ---------------------------- *
MN 7 REM * NEW ATARI USER -  DEC 1992 *
WV 8 REM ********************************
NO 9 REM
MG 100 BYTE=742:LINENO=10000:CHR=1:PAGE=0
   :LINE=0
EB 110 DIM HEX$(BYTE*2),H$(100),CHR(BYTE,
   2)
DB 120 POKE 82,0:GRAPHICS 0:POSITION 7,6:
   ? "MACHINE CODE NUMBER SORT ":POSITION
    11,7:? "CREATION UTILITY"
SY 130 POSITION 9,9:? "By Andrew Martin 1
   989"
LN 135 REM READ IN HEX DATA TO HEX$
OQ 140 RESTORE 500:FOR I=1 TO 15:READ H$:
   HEX$(I*100-99)=H$:NEXT I:FOR I=1 TO 50
   0:NEXT I
NQ 145 REM CONVERT TO STRING VARIABLE
SV 150 GRAPHICS 0:POSITION 0,2
AU 160 I=1:FOR H=1 TO BYTE*2 STEP 2
KB 170 H1=ASC(HEX$(H,H)):H2=ASC(HEX$(H+1,
   H+1))
PD 180 H1=H1-(48*(H1<65)+55*(H1>64)):H2=H
   2-(48*(H2<65)+55*(H2>64)):B=H1*16+H2
TE 190 IF (B>26 AND B<32) OR (B>124 AND B
   <128) OR (B>154 AND B<160) OR B>253 OR
    B=34 THEN GOSUB 330
PG 200 IF PAGE=0 THEN GOSUB 300
JT 210 ? CHR$(B);
CO 220 PAGE=PAGE+1:IF PAGE=98 THEN ? CHR$
   (34):PAGE=0:LINE=LINE+1:IF LINE/6=INT(
   LINE/6) THEN GOSUB 360
ZT 230 I=I+1:NEXT H:IF PAGE<>0 THEN ? CHR
   $(34)
UL 240 GOSUB 360
CM 245 REM CREATE UNDISPLAYABLE CHR'S
ZX 260 PAGE=0:FOR I=1 TO CHR-1
QG 270 IF PAGE=0 THEN PAGE=1:? LINENO+LIN
   E+1;" ";
ZQ 280 C=CHR(I,1):? "S$(";C;",";C;")=CHR$
   (";CHR(I,2);"):";
SY 285 IF I/5=INT(I/5) THEN PAGE=0:LINE=L
   INE+1:? "← "
KD 290 NEXT I:? "← ":GOSUB 360
GT 295 POSITION 2,5:? "SAVE THE DATA AFTE
   R LINE 10000 TO         DISK  OR TAPE US
   ING :"
EO 296 POSITION 6,8:? "LIST";CHR$(34);"C:
   ";CHR$(34);",10000,19999"
NC 297 POSITION 6,9:? "LIST";CHR$(34);"D:
   SORT2.LST";CHR$(34);",10000,19999"
ZR 298 POSITION 1,11:? "THEN USE THE ENTE
   R COMMAND TO RETRIEVE  THE SORT UTILIT
   Y INTO YOUR PROGRAM"
PK 299 END
```

```
SL 300 ALINE=I+98-1:IF ALINE>BYTE THEN AL
   INE=BYTE
NV 310 ? LINENO+LINE;" S$(";I;",";ALINE;"
   )=";CHR$(34);
ZD 320 RETURN
BK 330 CHR(CHR,1)=I:CHR(CHR,2)=B
RC 340 B=32:CHR=CHR+1
ZJ 350 RETURN
RE 360 POSITION 0,22:? "POKE 842,12:CONT"
MU 370 POSITION 0,0:POKE 842,13:STOP
TD 380 GRAPHICS 0:POSITION 0,2
ZR 390 RETURN
CT 500 REM 742 BYTES OF MACHINE CODE STAR
   TING FROM MEMORY LOCATION 25600 ONWARD
   S
IN 510 DATA 6885DF18A5D4693385CDA5D569028
   5CE6868F007A973A20B189004A90EA270A0009
   1CDA0038A91CDA001A200C8C8686895DE
IX 520 DATA 68C003D00985CC6885CBA9A8D0016
   895DDE8E8E8E8C4DFD0E186DCA58285CDA5838
   5CEA00084DA84DFA202B1CDD5DCF014E8
YI 530 DATA E8E8E8E4DC30F2B1CDF028C8AA10F
   8E6DFD0E4C8CAB5DC100AE8B1CD88C9A8F00CD
   0DCE8B1CD88C9A4D0D4E6DAA5DF95DCD0
HU 540 DATA D4A58685CDA58785CEA000A20198A
   001D1CDD03FA898D5DDF018E8E8E8E8E4DC30F
   318A90865CD85CD9002E6CEC8D0DBF021
EJ 550 DATA A58C95DEA58D95DF84D9A003B1CD4
   888B1CDA4D91875DE95DE6875DF95DF1890CFA
   6CBA4CCF00C984AA88A6AAA98D0F88AD0
EU 560 DATA 06A6CBCA8A29FE85DBA900851C851
   D851E851F85D285D1A5E085CE85D0A5DF85CD8
   5CFA4DBA5CF18690685CF9002E6D0A51E
JE 570 DATA 186906851E9002E61F88D0E7A5DAF
   03DA6DCE8A005B9DC00302BB9DF0095DD95DFB
   9DE0095DC95DEA5DB48B5DE1879DC0095
JT 580 DATA DE9002F6DF6838E901D0EDF002D09
   6E8E8E8E8C8C8C8C8C4DC30C8A200F036A5DAF
   0328693A6DCE8A005B9DC00301CB5DC18
YK 590 DATA 79DC0095DC9002F6DDB5DE1879DC0
   095DE9002F6DFE8E8E8E8C8C8C8C8C4DC30D7A
   693E8D002E6D1A5CD18690685CD9008E6
OF 600 DATA CEB004D0B6D0A2A51C186906851C9
   002E61DA5CF18690685CF9002E6D0A51E18690
   6851E9002E61FA000B1CD300AD014B1CF
YN 610 DATA F046303C1037B1CF1033D1CDF0259
   02DB02EB1CF302AF028D1CDF004B01F9020A00
   1B1CDD1CFF004B0169011C8C006D0F1F0
IM 620 DATA 15A001B1CDD1CFF00890031890731
   8900BC8C006D0EDF069D085D085A4DCC884D3A
   00784D98884D4A5CD85D5A5CE85D6A5CF
DG 630 DATA 85D7A5D085D8A000B1D548B1D791D
   56891D7C8C4D4D0F1A4D9C4DC102EB9DA00104
   9B9DC004818651C85D5B9DD00651D85D6
XM 640 DATA 6818651E85D7B9DD00651F85D8A90
   685D4C8C8C8C884D9D0BBA90185D238A5CBE5D
   B85D3A5CCE900E4D3D088C5D1D084A5D2
EV 650 DATA D08246DBD0FA608693A6D3B5DC85D
   5B5DD85D6B5DE85D7A5DF85D8E8E8E8E886D3A
   693B9DA0085D4D0B5
```

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FOR SALE

XL SYSTEM: 800XL, 1050 disk drive, all leads, Mini Office II, various games inc. Colossus Chess 3, Jewels of Darkness. £100. Tel. 0666 502939

XL HARDWARE: 800XL (new board and chips), £35; 1050 disk drive, £40; 1010 recorder, £20; Trak-ball, £5; ICD Printer Connection, £15. All vgc and including cables and manuals. Print Shop and Page 6 disks, £20; Logo ROM, £15; Planetarium, Music Painter, First XLENT word processor, Mini Office II, £5 each; First Steps Mr. Men, My First Alphabet, Maxwell's Demon, £3 each. Pacman, £2, Qbert, Donkey Kong Jr. Ballblazer, Elektraglide all at £4 each. SAMS Atari Programmers Reference Guide, £4; many Page 6 Library Disk and 65 assorted magazines, mostly Atari User/Page 6 but with some Antic, Analog and Monitor. All for sale individually or £150 the lot inc. p&p. Phone 0742 581605 evenings or weekends.

XL SYSTEM: 800XL, 1050 disk drive, 1010 tape deck, lots of software on tape, disk and Rom inc. Transdisk, Macro Assembler plus books and magazines, £120. Tel. 0502 588499

HARDWARE: 800XL plus 1050 drive, also Atari User mags and a faulty 800XL, £70. Tel. 021 744 3602. Buyer collects or pays postage

XL SYSTEM: 800XL and 1050 disk drive, all in good working order and complete with all leads etc. Offer includes large amount of Page 6 and Atari User magazines, several books and software. Sick 1027 printer thrown in as is only suitable for spares: £150 o.n.o. Tel. Tiverton (0884) 256489 after 7pm.

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HARDWARE CLEAR OUT: 1088XE, psu, cable, software, £95; 320XE, psu, cable, software, £70; 256XL, psu, cable, software, £50; Plus other bits and pieces - 50/60 cassettes, £35. All inclusive of postage. Contact Mark on 0752 344650 or send s.a.e. for fuller list to M.G. Rice, 29 Copse Rpad, Plymouth, Devon PL7 3PZ

XE SYSTEM: 130XE, 1050 disk drive, choice of Epson LQ800 24 pin printer or Star LC10 9 pin printer inc. interface, joysticks, trakball, touch tablet, all boxed with manuals and leads. Software inc. word processors, spreadsheets, text editors, simulators, lots of games etc. Classics such as Pacman and Missile Command. Plenty of reference books, manuals and magazines. £250 o.n.o. Tel. 0635 863542 (Berkshire)

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ST SYSTEM: 520STE with games, utilities, word processor, database, GFA Basic, assembler, raytrace, STOS Basic, ST Basic, books magazines, cover disks, leads and mouse etc. Boxed and still guaranteed. Only £286. Write to D. Rathod, 22, Nevett Street, Preston, Lancs PR1 4RB

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XL SYSTEM: 800XL, 1050 disk drive, Datacorder, joystick, loads of games on tape and disk inc. Mercenary and DOS 3 and programming books, manuals and mags. All leads included. £180 o.n.o. Tel. 021 745 4437 (Birmingham). Buyer collects.

XL SYSTEM: 800XL, 1050 disk drive, 1010 data recorder, all vgc. All boxed with instructions. £120 o.n.o. plus postage (or buyer collects). Touch Tablet with Atari Artist ROM, boxed, £25 o.n.o. Tel. 0243 827420 (Bognor Regis) after 6pm

XL SYSTEM: 800XL, 1010 recorder (needs slight attention), all leads and manuals included. £25. Phone Jamie on 0296 75381

XL SYSTEM: 800XL, 1050 drive, 1010 datacorder, joystick, manuals, books, Transdisk, disk games inc. FS2, Alternate Reality, Hitchhikers Guide, The Pawn and load more tape games, cartridges, £170 o.n.o. Tel. Mad Max on 051 639 1141

HARD/SOFTWARE: Two 800XL keyboards, two psu's, two joysticks, two TV leads, three cassette leads, one adapter, loads of cassette games, five other programs. Must sell. £75 the lot. Will split, reasonable offers only. Can deliver locally, otherwise buyer collects or pays postage. Tel. John 091 258 4134

XL SYSTEM: 800XL, 1050 disk drive, 1029 printer, manuals, boxed, vgc. Assembler Editor cartridge, De Re Atari, games software, disk, £150 o.n.o. Tel. (0272) 421977 (Bristol)

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WANTED

ROMS: Crimebuster, Crossbow, SpartaDos X and MAC'65 cartridges for XL/XE with instruction manuals, also instruction manuals for Omnimon XL. John, 51 Mayston St. East Hawthorn, Vic 3123, Australia

POWER SUPPLY: 1050 disk drive power supply wanted, also information on connecting a hard drive to 130XE. Contact Peter on 0203 691392

HELP: Any info or instructions on GRAPHIX AT printer interface, also printer drivers require a 'tilde' which is ASCII 126 but not the same as ATASCII 126. Does anyone know if it can be generated and used in a driver within 1st XLENT word processor? Finally, my disk copy of 1st Xlent W/P docs is corrupted. Can anyone let me have a spare please? John Bunting, 101, Windsor Drive, Wingerworth, Chesterfield, S42 6TQ. Tel. (0246) 238187

MAGAZINES: I am looking for Atari Users and Page 6 and all the others. Send your price list (inc. postage) to DELELIS Christian, 321 Rue Leon Blum, 62232 Annezin, France

PL65: PL65 with manual etc. The program was developed by Noahsoft a while back. Will pay top price. Write to Nir Darey, P. O. Box 6002, Acco, Israel 24720. Tel. 9724710062

CARTRIDGES: Any XL/XE cartridges, any title, boxed, unboxed with or without instructions. Tel. (0602) 720597 or write to M. Fenwick,55 Bridge Street. Long Eaton, Nottingham NG10 4QS

VARIOUS: 1050 service manual, 850 service manual and instruction book, Atari Tech. Ref. Notes, Electronic Computer Projects, 101 Tips and Tricks for Atari Computers, Mapping The Atari, De Re Atari, Analog Compendium, 400/800 Disk Guide, Issues 20, 21, 23, 25, 26, 27, 28 of Page 6 and issues 10,11,12,14,17,19 of Monitor. Disk for Superscript, cartridge for MAC/65 Toolkit, touch tablet, Leaderboard, Colossus Chess IV, Trakball, 1010 recorder, Graphic AT or other printer interface, Super Archiver II and Controller Card PPBII(XE), Acorn Electron User's Handbook/Ref. manual. Will buy or exchange TV/ Radio/ electrical service manuals and books. Write for list stating what you have. R. McGrath, 41 Belvedere Place, Dublin 1, Eire

MAGAZINES: Page 6 issues 1 to 12 plus issue 15. Good price and postage paid. Could also swap for Atari User Vol. 1, No. 8, 9, 10, 11, 12, Vol. 2 No. 1, 3, 7 or Page 6 issue 17, 19 and 23. Please write to John van der Spoel, Groenestein 1, 3334 CG Zwijndrecht, The Netherlands

ADVENTURES: I desperately need Zork II, Deadline, Spellbreaker, Planetfall, Moonmist or Wishbringer. If you have any of these and would like to exchange them for Stationfall, Lurking Horror, Cutthroats or other adventures, please contact Mark Stinson, 7 Arleston Lane, Arleston, Wellington, Telford TF1 2LT. Tel. 0952 641360

DISK DRIVE: 1050 disk drive or XF551 wanted with DOS, urgent. No cash but swap Sord (CGL) M5 computer with two programming languages, Falac spreadsheet cartridges and other software. Tel. 081 533 3774

WANTED: Dennis Through The Looking (Drinking?) Glass on tape or disk. Please write with price. John Liever, 185 Rosehill Court, Salford, M6 5LE. Also wanted official docs for 'Resurex' and any versions over 2.0 of this program

VARIOUS: Manual for Epson FX80+ printer or copy; Alternate Reality: City and/or Dungeon on disk, will pay or exchange for other software; Net Worth (Scarborough System Home Money Manager), master disk required, also Biorhythms (APX) on cassette or disk; 1050 disk drive in working order with leads at a reasonable price. Please phone Tony on Dublin 6241754 or write to T. McGuiness, 95 Hillcrest Drive, Lucan, County Dublin, Ireland

ATARI USER: Copy of March 1987 Atari User along with parts 1 and 2 of the Speech Synthesiser from Len Golding from around the same date. I would be very happy if anyone can help. I will pay generously. Call Mr. K. Brooks on (Eastbourne) 0323 761824

SOFTWARE: I want to buy a disk drive, Mapping The Atari, Assembler Editor cartridge and a program to develop action games. Also want Druid, Basil The Great Mouse Detective, Fred, Rampage, Leaderboard, Domain of The Undead, Star Wars, Screaming Wings, Mountain Bike Sim., Joe Blade II, Cygnus X1, Boulderdash IV Construction Kit, who Dares Wins II, Spindizzy, Amaroute, Hawkquest (all on cassette). Please write to Jose Pereira, Rua Da Bombarda, 21 - 1 -Esq., 1100 Lisboa, Portugal.

PENPALS/HELP

THE CITY HAS FALLEN!: But where has it gone? Formerly on 021 321 1610 we were using it regularly when it just upped and went! We know it 'twas for sale but who acquired it and - more importantly - is it in operation yet and what's the sussa-mundo on the new no.???? These questions need answering. Sebastian and Moggie, former resident and citizen respectively. (Is Sizt still out there??)

AUSTRALIA: Are there any Australian Atari XL or XE users left? I want contact with you to chat, write, swap or just to know you're still out there. Ian Beohme, 2, Laughlin Avenue, Nunawading, Vic 3131, Australia

FUTURA: Send now for the latest issue. Futura is packed full with interesting articles and top quality programs for all 8-bitters. Price is only £1.95 on disk or £3.95 printed copy/ cassette. Send to: S.J. Murray, 71 Walker Road, Torry, Aberdeen, AB1 3DL. Scotland (Please make cheques payable to S.J. Murray)

BBS: BECOTEL the biggest 'non commercial' XL/XE/LYNX BBS in Europe. With over 4 Megabyte free download and international netmail with Germany, Canada and the USA. Online every day from 5 pm until 5am (GMT). 300/1200/1200-75/2400 baud. Call now! Holland +31-20-6326859

HELP: Who knows if FRED from Zeppelin can be transferred with Transdisk and if so how? Please write me. Fred Meijer, Nachtegaalstraat 29, 2922VL Krimpen ad Ijssel, The Netherlands

DATACORDER: XC12 datacorder wanted. E. Slattery, Summerdale Lawn, Youghal, Ireland

PORTSMOUTH: Is anyone interested in setting up an Atari 8-bit user group in the Portsmouth area? If you would like to take a more active role in keeping the Atari alive please ring Neil Taylor on (0705) 596242

IRELAND: Attention Irish 8-bit users. If you want to keep the 8-bit alive in Ireland send for details of newsletter to R. Paden, 54, Ard Millan Crescent, Scrabo Estate, Newtownards, Co. Down

XL/XE PENPALS: I don't eat frogs but I'm French! I've got a 130XE and two 1050's, I'm sure that you have some great old (and new?) games to swap with me! (and hints, tips etc.) So write to me. Write to DELELIS, Christian, 321 Rue Leon Blum 62232 Annezin, France

USER GROUP: For tape users. send s.a.e. to A. Gilbey, 1 Eastbrook Ave., Dagenham, Essex RM10 7UL

ENGLISH PALS: Any 8-bit cassette users living in England who want to swap games, hints, tips, maps etc. write to Nicky Bason, 209B Harlesden Road, Willesden, London, NW10 3SD

SERIOUS PENPAL: XL owner wants penpal to exchange serious software (WP's etc.) and also games tape or disk. Write to Bryn Thomas, 71 Woodford Avenue, Ramsgate, Kent CT12 6RE

DEAD HARDWARE: Any dead hardware or spares wanted. Contact Mark on 0752 344650 or send sae for fuller list to M.G. Rice, 29 Copse Road, Plymouth, Devon PL7 3PZ

STOS USER: I am an ST owner currently using STOS to create games. Has anyone out there got any listings from Peter Hickman's STOS Column? I will pay for photocopies if required. Please write to Desmond Townson, Peacehaven, Love Lane, Bickington, Devon TQ12 6JT or tel. (0626) 821 387

CONTACT: I own a 65XE, 800XL and a 1050 disk drive (with Doubler) and I am looking for contacts with a similar set up. I am interested in adventures and RPG's but I also enjoy other types of software also. Write to Jeffrey M. Foster, 57 Ripley Close, Salford M5 4BY

HELP: Does anyone know how the HAN. K menu stores the length of files on its menu? If you get a directory using Menu Creator then it gives start sectors and lengths yet only seems to read the menu part. Any help appreciated. John Liever, 185 Rosehill Court, Salford, M6 5LE

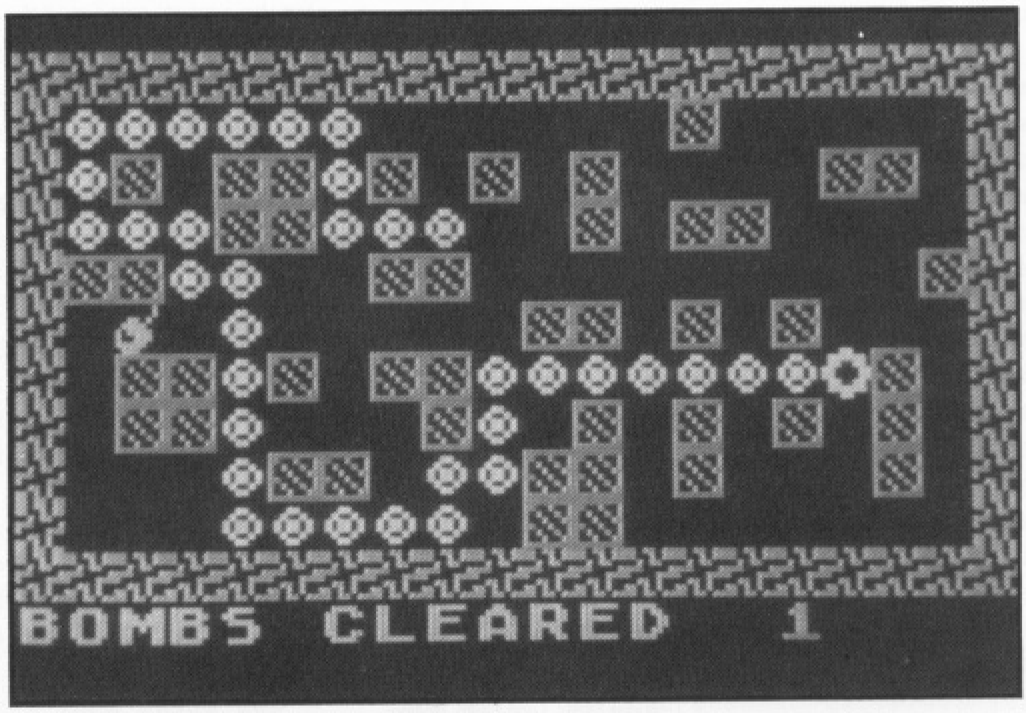
PENPALS: I would like to hear from any 8-bit owners. I own a 130XE, 1050 and 1027. All letters answered. Write to Adrian Groves, 32 Ingmire Road, Eastville, Bristol BS5 6XD

NEW ATARI GROUP: Enthusiastic Atarians desperately seeking help to form an Atari 8-bit User Group. It would be much appreciated if an experienced group organiser could show us the ropes. We want to achieve many goals, but as with everything else we need to build some strong roots. Please write. All letters answered. A. Thompson, 135 Henllys Way, St. Dials, Cwmbran, Gwent NP44 7NF

CONTACT is FREE of charge and may be used by any genuine Atari enthusiast for contacting other owners. Any notice may be included except those offering software only for sale or exchange or those offering items for sale commercially. The Editor reserves the right to omit or edit any notice received at his discresion. If space is tight, notices may be shortened and addresses may be omitted with only telephone numbers being published.
Send your CONTACT notice to CONTACT, PAGE 6, P.O. Box 54, Stafford, ST16 1DR. Please write your notice on a separate sheet of paper, not as part of a letter.

FOR SALE ... WANTED ... PEN PALS ... ADVICE ... HELP ...

SNAKEY



by Eric Liddell

You have probably seen Harry around before but this time he has some new adventures for you to enjoy and, perhaps, his listing will show you how you can write similar programs of your own.

Fresh from his adventures in the mushroom garden where he proved himself admirably good at clearing up, Harry The Snake has taken a job at a local warehouse. The owner of the warehouse, Rich Richard, has many powerful enemies who keep trying to break into the warehouse which is why he has employed Harry to guard it for him at night.

One night, while Harry was slithering around the packing crates humming a snakey little tune to himself to pass the time, one of Rich Richard's enemies started to throw bombs through an open window in an attempt to sabotage the warehouse. Your job is to guide Harry around the warehouse defusing the bombs. This all sounds very easy but there is one small problem, Harry has grown quite a lot from all the mushrooms he ate while in the garden and is now very, very long. You must be very careful when slithering around the packing crates not to trap yourself in a dead end because if Harry touches his own body the game is over and Harry is sacked.

When a bomb has been successfully defused another is thrown through the window to land in a different part of the warehouse. You must continue to guide Harry around the warehouse to defuse the bombs for as long as possible. To guide Harry use a joystick in port one. The number of bombs defused is shown at the bottom of the screen underneath the game screen.

Happy guarding and watch those bombs!

SNAKEY

```
CS 1 REM ########################################
YX 2 REM #           SNAKEY II                  #
ZO 3 REM #         by Rick Lidell               #
SF 4 REM # ---------------------------------- #
PS 5 REM #  NEW ATARI USER - DEC 1992           #
CX 6 REM ########################################
NM 7 REM
GH 15 POKE 82,0
LQ 20 GRAPHICS 0
SW 30 POKE 710,0:POKE 752,1
LF 40 PRINT "┌──────────────────────────────────────┐";
FO 50 PRINT "|            SNAKEY II                 |";
XG 60 PRINT "└──────────────────────────────────────┘"
UM 70 PRINT :PRINT :PRINT
AW 80 PRINT "                                      B
   y Rick '89"
VH 90 FOR I=1 TO 13:PRINT :NEXT I
PZ 100 PRINT "                           Please
   Wait......"
IF 110 SET=PEEK(106)-8:X=256*SET
ZP 120 FOR P=0 TO 1023:POKE X+P,PEEK(5734
   4+P):NEXT P
MP 130 FOR I=0 TO 39:READ A:POKE X+24+I,A
   :NEXT I
HL 131 SH=40644:B1=40643:B2=40623:B3=4062
   2:B4=40621:B5=40601:B6=40581:B7=40582:
   B8=40583:B9=40584:B10=40585:B11=40586
XP 132 B12=40606:B13=40626:B14=40627:B15=
   40628:B16=40608:B17=40588:B18=40589:B1
   9=40590:B20=40610:B21=40630:B22=40650
UF 133 B23=40651:B24=40652:B25=40632:B26=
   40612:B27=40613:B28=40614:B29=40615:B3
   0=40595:B31=40596:B32=40597:B33=40598
AS 134 B34=40618:B35=40638
UH 135 DIR=20:SC=0
BV 140 GRAPHICS 18:POKE 756,SET:POKE 752,
   1
BB 141 SCREEN=PEEK(88)+PEEK(89)*256
ZA 145 SETCOLOR 2,1,6:SETCOLOR 0,3,6:SETC
   OLOR 1,12,13
DP 150 PRINT #6;"###############################
             #";
PV 160 FOR I=1 TO 8
XR 170 PRINT #6;"#                  #";
GH 180 NEXT I
WS 190 PRINT #6;"##################################";
UE 195 POSITION 0,11:PRINT #6;"bombs clea
   red  ";SC
GF 200 POSITION 13,1:PRINT #6;"S"
IG 210 POSITION 2,2
JF 220 PRINT #6;"S SS S S S    SS"
KC 230 POSITION 4,3
FX 240 PRINT #6;"SS     S SS"
JG 250 POSITION 1,4
ZJ 260 PRINT #6;"SS    SS         S"
PL 270 POSITION 10,5
CP 280 PRINT #6;"SS S S"
LI 290 POSITION 2,6
PW 300 PRINT #6;"SS S SS        S"
LJ 310 POSITION 2,7
LC 320 PRINT #6;"SS     S  S S S S"
NT 330 POSITION 5,8
TI 340 PRINT #6;"SS    SS S  S"
SS 341 POSITION 10,9:PRINT #6;"SS"
QW 345 POKE 40728,197
OU 350 POKE SH,70:POKE B1,71:POKE B2,71:P
   OKE B3,71:POKE B4,71:POKE B5,71:POKE B
   6,71:POKE B7,71:POKE B8,71:POKE B9,71
QK 360 POKE B10,71:POKE B11,71:POKE B12,7
   1:POKE B13,71:POKE B14,71:POKE B15,71:
   POKE B16,71:POKE B17,71:POKE B18,71
UI 370 POKE B19,71:POKE B20,71:POKE B21,7
   1:POKE B22,71:POKE B23,71:POKE B24,71:
   POKE B25,71:POKE B26,71:POKE B27,71
MR 380 POKE B28,71:POKE B29,71:POKE B30,7
   1:POKE B31,71:POKE B32,71:POKE B33,71:
   POKE B34,71:POKE B35,71
RT 385 SOUND 0,230,14,10:SOUND 0,0,0,0
IJ 390 S=STICK(0)
KD 400 IF S=14 THEN DIR=-20
TY 410 IF S=13 THEN DIR=20
PV 420 IF S=11 THEN DIR=-1
IP 430 IF S=7 THEN DIR=1
RN 431 IF PEEK(SH+DIR)=197 THEN SC=SC+1:P
   OSITION 0,11:PRINT #6;"bombs cleared
   ";SC:POKE SH+DIR,0:GOSUB 1000
OC 432 IF PEEK(SH+DIR)=71 THEN 4000
UR 435 IF PEEK(SH+DIR)<>0 THEN 390
SL 440 GOSUB 5000
OS 460 GOTO 350
PY 1000 FOR I=15 TO 0 STEP -0.5:SETCOLOR
   4,0,I:SOUND 0,5,8,I:NEXT I
NF 1010 RA=INT(RND(0)*162)+40581:IF PEEK(
   RA)<>0 THEN 1010
VL 1020 FOR I=0 TO 15 STEP 0.5:SOUND 0,6,
   8,1:NEXT I:POKE RA,197:FOR I=15 TO 0 S
   TEP -1:POKE RA,0:POKE RA,197
CH 1030 SOUND 0,6,8,I:NEXT I:RETURN
PN 4000 FOR I=15 TO 0 STEP -0.2:SOUND 0,5
   ,8,I:SETCOLOR 1,0,I:NEXT I
YH 4010 FOR I=1 TO 5
DA 4020 FOR P=10 TO 0 STEP -1.5:SOUND 0,P
   ,8,10:NEXT P:NEXT I
EY 4030 FOR I=15 TO 0 STEP -0.2:SOUND 0,I
   ,6,I:NEXT I
YK 4040 FOR I=1 TO 9:POSITION 1,I
KZ 4050 PRINT #6;"                  "
FK 4060 NEXT I
ER 4061 POKE 756,224
EB 4065 POSITION 1,3:PRINT #6;"you've bee
   n fired!"
UB 4070 POSITION 5,5:PRINT #6;"game  over
   "
II 4080 POSITION 5,7:PRINT #6;"PRESS FIRE
   "
WN 4085 FOR I=0 TO 15 STEP 0.5:SETCOLOR 1
   ,7,I:IF STRIG(0)=0 THEN 131
FT 4090 NEXT I
EO 4100 FOR I=15 TO 0 STEP -0.5:SETCOLOR
   1,7,I:IF STRIG(0)=0 THEN 131
NO 4110 NEXT I:GOTO 4040
PT 5000 POKE B35,0:B35=B34:B34=B33:B33=B3
   2:B32=B31:B31=B30:B30=B29:B29=B28:B28=
   B27:B27=B26:B26=B25:B25=B24:B24=B23:B2
   3=B22
QV 5010 B22=B21:B21=B20:B20=B19:B19=B18:B
   18=B17:B17=B16:B16=B15:B15=B14:B14=B13
   :B13=B12:B12=B11:B11=B10:B10=B9:B9=B8:
   B8=B7
ZZ 5020 B7=B6:B6=B5:B5=B4:B4=B3:B3=B2:B2=
   B1:B1=SH:SH=SH+DIR:RETURN
ED 9000 REM  WALL CHARACTER
NM 9010 DATA 219,203,44,225,135,52,212,21
   9
BD 9020 REM  PACKING CRATE CHARACTER
WW 9030 DATA 255,201,165,147,201,165,147,
   255
XH 9040 REM  BOMB CHARACTER
IP 9050 DATA 2,2,52,120,188,156,248,112
QO 9060 REM  SNAKE HEAD CHARACTER
NM 9070 DATA 24,126,102,195,195,102,126,2
   4
BE 9080 REM  SNAKES BODY CHARACTER
OA 9090 DATA 0,24,36,90,90,36,24,0
```

BANK SWITCHING part 2

David Manlove concludes his tutorial by explaining how to use the 64K extra RAM in the 130XE Banks

In the last article I showed how to access the memory banks behind BASIC and the OS on the XL and XE computers. 130XE users have access to an extra 64K RAM which gives their machine its 128K status. This opens up a whole range of options for programmers. As the BASIC and OS banks are available for use also on the 130XE, the potential for use is even greater if they are used in conjunction with the extra 64K RAM.

THE 16K BANKS

The 130XE is identical to the 800XL apart from the extra memory which exists as a series of four 16K memory banks. These 16K banks are only accessible one at a time, however, which can be a major disadvantage since it means that the full 128K cannot be used at once but this need not limit the possibilities for usage. For example for a four-level of difficulty quiz game, the user could load 64K of questions into the extra memory (16K per level) and then access 16K of questions at any one time. Since only one level would be used at once there is no disadvantage in not being able to select the full memory.

See figure 1 for a diagram of the construction of the 130XE memory. The main (normal memory) is from locations $0000-$FFFF (0-65535) as on the 800XL. The shadow 8K block is behind $A000-$BFFF and the shadow 14K block is behind $C000-$CFFF and $D800-$FFFF as on the 800XL. The extra 64K is in the extended memory block which occupies $0000-$FFFF. This is not to be confused with the main block which has similar numbering; the two are entirely separate. On the extended block, bank 0 occupies $0000-$3FFF, 1 takes up $4000-$7FFF, 2 uses $8000-$BFFF and 3 resides in $C000-$FFFF. As for the shadow blocks, access to extended banks 0-3 is controlled by memory byte $D301 (54017) in the main block.

When $D301 is set to its normal value (253) the main block is in place and no shadow or extended RAM blocks are selected. Upon altering $D301 correctly one of these 16K banks will exchange with a 16K block of memory from the main memory. In fact this block is from $4000-$7FFF (16384-32767) on the main block. It is called the 'access window' for the extended RAM blocks as this is the only area through which the 16K banks are available for alteration. Thus it follows that no matter which bank is selected, it always pops up in the same access window $4000-$7FFF in the main memory. The locations that the banks each occupy in the extended block are now of less importance. Note that you should SAVE any programs in memory before making any alterations to the access window area as this may conflict with your program.

When $D301 is changed back to its normal value the main memory pops back up in the access window with the values that it contained before $D301 was altered. Also the bank that replaced it now stores the values that were given to it, ready for the next time that the bank is accessed. This means that the banks could be used for page flipping: graphic screens could be loaded into the banks and then they would pop up the instant $D301 was changed. To illustrate this, type in, SAVE and RUN listing 1. This sets up different text screens in each bank including the main block. On pressing any key the banks are cycled through using page flipping. The text appears instantly; this would not happen if it had to be PRINTed each time thus proving the worth of this technique.

I should now explain how to call up the banks. They can be accessed in different modes - however for now we can be concerned with the simplest mode only. To call up bank X, use

```
POKE 54017,193+(4*X)
```

Then to call back the main block use

```
POKE 54017,253
```

Now test this by using the following when in normal mode:

```
POKE 16384,128:POKE 54017,193:POKE
16384,255:POKE 54017,253
```

This stores a 128 in location 16384 (byte 0 of the access window) in normal mode and a 255 in byte 0 of bank 0. Now try:

```
PRINT PEEK(16384):POKE 54017,193:PRINT
PEEK(16384)
```

A 128 comes up first and then a 255 showing that the memory contents were not reset when $D301 was altered. This is basically the method that users would employ to store code in the extended banks and thus realise the full 128K.

```
CS 1 REM ################################
PL 2 REM #      PAGE FLIPPING DEMO       #
GY 3 REM #       by David Manlove        #
SF 4 REM # ----------------------------- #
PS 5 REM #  NEW ATARI USER - DEC 1992    #
CX 6 REM ################################
BA 30 REM
BC 40 FOR I=1536 TO 1547:READ A:POKE I,A:
   NEXT I
TL 50 DATA 104,104,104,162,0,157,0,64,232
   ,208,250,96
DE 60 GRAPHICS 18:DL=PEEK(560)+PEEK(561)*
   256:POKE 88,0:POKE 89,64
PA 70 A=USR(1536,238)
NT 80 ? #6;"NOW ACCESSING NORMALMEMORY "
HD 90 FOR I=0 TO 3:POKE 54017,193+4*I:A=U
   SR(1536,144+I):POSITION 0,0:? #6;"NOW
   ACCESSING MEMORYBANK ";I;" ";
DT 100 NEXT I:POKE DL+4,0:POKE DL+5,64:CL
   OSE #1:OPEN #1,4,0,"K:"
KB 110 POKE 54017,253:GET #1,A
OR 120 FOR I=0 TO 3:POKE 54017,193+4*I:GE
   T #1,A:NEXT I:GOTO 110
```

```
CS 1 REM ################################
ZH 2 REM #  BANK SWITCHING TEST $D301    #
VF 3 REM #       by David Manlove        #
SF 4 REM # ----------------------------- #
PS 5 REM #  NEW ATARI USER - DEC 1992    #
CX 6 REM ################################
BA 30 REM
BC 40 FOR I=1536 TO 1547:READ A:POKE I,A:
   NEXT I
KL 50 FOR I=0 TO 48 STEP 16:POKE 54017,19
   3+I:A=USR(1536):NEXT I
WG 60 DATA 104,169,0,162,0,157,0,64,232,2
   08,250,96
FY 70 DIM A$(20000):A$(1)="♥":A$(20000)="
   ♥":A$(2)=A$
AH 80 GRAPHICS 0:? "MODE NO. ";:INPUT MOD
   E:N=MODE*16:POKE 54017,193+N
DH 90 GRAPHICS 2:DL=PEEK(560)+PEEK(561)*2
   56
ZJ 100 POKE 88,0:POKE 89,64:POKE DL+4,0:P
   OKE DL+5,64:POKE 82,0
OY 110 CLOSE #1:OPEN #1,4,0,"K:":X=0:Y=0:
   A=ADR(A$):X=16384-A+1:Y=X+158
KA 120 GET #1,A:IF A<>27 THEN POKE 54017,
   241:? #6;CHR$(A);:POKE 54017,193+N:? :
   ? A$(X,Y);:GOTO 120
UR 130 RUN
```

THE MODES OF ACCESS

The 130XE has two internal processors: the 6502 CPU and the ANTIC graphics chip. The different modes of accessing the 16K banks refer to the way in which the CPU and/or ANTIC 'see' the memory from 16384 to 32767. No other area of memory is affected. When you specify a mode of access you will always be accessing one of the banks. There are four of these modes and I shall describe each separately.

When mode 0 is selected the CPU accesses the extended bank between $4000 and $7FFF. This means that when the user alters locations in the access window he is altering one of the chosen extended banks and not the main bank. Thus data such as machine code routines could be stored in the chosen bank. Also, in mode 0, any ANTIC cycles that have cause to refer to the area $4000-$7FFF will not now take place in the main bank but instead in the extended bank chosen. This means that display lists or graphic screens can be stored in an extended bank and referred to in the same way as listing 1 does. This mode is called the General Extended RAM Mode since both ANTIC and the CPU are referred to the extended bank with the main bank dormant.

Mode 1 is called the Video Extended RAM Mode since, when this mode is selected, ANTIC refers to the extended bank when access window references are encountered (as per mode 0). However the difference is that the CPU sees only the main bank and any alterations to the access window while in this mode will be referred to main memory and not an extended bank. It would therefore only be suitable to store display lists and/or graphic screens in the chosen bank.

Mode 2 is called the CPU extended RAM mode because this mode involves only the CPU accessing the extended block. This means that any CPU references to the access window are directed to the chosen bank instead of main memory. All ANTIC cycles occur in the main memory and ANTIC ignores the extended block. So any user data can be stored in the chosen bank and accessed at will.

It should be remembered that all the above only applies to the block $4000-$7FFF and no other parts of memory are affected. For mode 3 ALL parts of memory are unaffected - this is effectively 'normal mode'. All CPU and ANTIC cycles are referred to the main bank. It therefore does not matter which bank is chosen in conjunction with this mode (all mode selections have to be made in conjunction with a bank selection, and vice versa). If X is the number of the bank chosen, and Y is the number of the mode chosen, then the user alteration will be made using:

POKE 54017,(4*X)+(16*Y)

To illustrate the different modes, type in, SAVE and RUN listing 2. The program starts by asking the user to specify a mode - start by selecting mode 0 first. The program then switches to a split GR.2 screen. The idea is to show the user how the CPU and ANTIC are presently 'seeing' the access window when bank 0 and a mode are selected. The top part is graphical: it shows you what ANTIC sees. The bottom part shows you what is in the access window; i.e. it shows you what the CPU sees. Try pressing a few keys. Ignoring the flickers, the screen does not change. This is because the alterations are being POKEd (by the ? #6 command) into main memory and ANTIC is accessing bank 0 so it does not 'see' the alterations. The CPU does not see the changes either since it accesses bank 0 also. Press <Esc> to re-run. Now try mode 1 (Video Mode): on pressing a key only the bottom part changes since ANTIC is still accessing the extended bank while the CPU accesses main memory. In mode 2 (CPU mode) the top part changes due to ANTIC accessing main memory now. Mode 3 (normal mode) allows both top and bottom parts to change since both CPU and ANTIC access main memory.

I will end this article by giving a bit breakdown of location $D301:

Bit 0	- OS bit (0=RAM, 1=ROM)
Bit 1	- BASIC bit (0=ROM, 1=RAM)
Bits 2,3	- bank selection bits for banks 0-3 (bit 3 is the high bit)
Bits 4,5	- mode selection bits for modes 0-3 (bit 5 is the high bit)
Bit 6	- unused on 130XE (normally=1)
Bit 7	- self test control bit (1=Self Test off, 0=Self test on).

I hope these articles go some way to allowing the reader to access the extra memory easily from programs. It is a pity that only a few companies have brought out 128K software but the opportunity certainly exists.

SCOTLAND THE BRAVE!

The Atari Classic has always enjoyed strong support north of the border and that support is still going strong as Paul Rixon discovers

In the absence of commercially motivated support, 8-bit users are obliged to support themselves. Some prefer to quietly compute in the privacy of their homes whilst others attempt to organise gatherings and share their enthusiasm with others. User groups have never been as popular in Britain as they have in certain other countries (the US for example) but there are several keen individuals whose determination to persuade fellow hobbyists into participation is probably the main reason that literature on 8-bit topics is still being published. I recently received products from two dedicated Scottish Atarians who are striving to keep the 8-bits alive.

FUTURA

Long-term Atarian Stuart Murray - whose claims to fame include winning the Scottish Atari Pacman championships in 1982 and the Scottish, UK and World Atari VCS championships in 1983 - was understandably dismayed by the growing number of 8-bit users selling their machines because of the lack of software and hardware support. He decided to take positive action and placed advertisements in the local press in an effort to form a hardcore base of 8-bit users throughout the north of Scotland. He has succeeded in gaining the interest of over thirty Scottish users and subsequently recruited enough local members to populate regular meetings of the 'North Of Scotland Atari User Group' (NOSAUG). Some of the club services include hardware advice, a public domain library for disk and cassette users and the sale of second hand commercial software. Stuart produces a club newsletter called 'Futura' for regular distribution on disk, cassette and paper. Every issue contains a mixture of editorial, text articles and top quality public domain software. I was pleased to receive copies of the first three issues - especially after I'd examined their content!

One of the highlights of Futura 1 is Speedscript, a highly-useable word processing package that originally appeared in book form, so you had to spend hours and hours typing it in (it was reviewed in Page 6 issue 26). Although Speedscript originates from a Basic program it is actually written in machine code and is supplied with Futura as a binary load file. Start it up and you're instantly presented with a flashing cursor - a cue to get typing! The screen text is notably easy to read since Speedscript uses a clearer typeface than Atari's standard offering. All the essential word processing features are present - edit, delete, search/replace, word wrap, print formats, etc. - and the only thing that's seriously lacking is a spell checker. If your word processing needs don't justify the expense of a commercial heavyweight such a Superscript or Paperclip, Speedscript is an excellent 'budget' option.

Another handy program is MyCopyr, a disk copier that takes full advantage of expanded memory systems. On a less serious note Futura 1 contains five games, including the once commercially released Table Football from Rino Marketing plus clones of Spindizzy and Trailblazer. A couple of amusing demos are slipped in for good measure. Text files are abundant too with a personal report of the AMS show in Stafford, a no-nonsense Basic tutorial, a comprehensive list of UK Atari supporters and several others besides.

Futura 2 has a musical theme, though there's also lots to read and play as before. Atari Drum Machine is an innovative application from Poland. Once you exit the impressive demo of New Order's Blue Monday you have the opportunity to place your own bass drums, snares, claps etc. onto 'voices' displayed at the top of the screen. When you've formed a pattern, you simply choose 'play' to hear the results. You can build several patterns into longer songs or fiddle with the tempo, pitch and other parameters. Your compositions can be saved to disk for future use. You may be expecting a few pathetic beeps and squeaks but this is top quality digitised stuff, it sounds great! The Laser Demo is another one from Poland and is guaranteed to impress, but only if you can understand the Polish scrolling messages!

Sound Monitor Professional is a German application that lets you create songs and play them back in a similar manner to 'sound tracker' programs in the 16-bit world (though not using digitised voices). Experimentation is required since most of the text is German but it's not difficult to comprehend and there are great demo songs provided on the Futura disk. Elsewhere on Futura 2 there is a horse racing game called Triple Crown which allows eight players to participate - selecting form, placing bets and watching the races. The race graphics are quite amusing and will have you on the edge of your seats - especially if there's real money on the table! Other games include an addictive puzzle similar to Ke-Soft's Sogon and

another Trailblazer-style hopping expedition. In the textual section you'll find the latest 8-bit news and a review of the Atari Canadian Exposition held last April in Toronto.

The third issue of Futura appears to maintain the high standard introduced by its predecessors. The first side is packed with articles on subjects ranging from the history of computers to humour (obtained from the US Pokey Newsletter). On the strategic front International Bridge Contractors is a business simulation in which you try to gain sufficient staff, materials and customers to keep your bridge construction company going. For arcade freaks Futura offers a 3-D version of Tetris, a reasonable maze game (awful music!) and a scrolling adventure called Aliens. Also, Jane's Program is best described as an intriguing interactive musical 'thingamee'! Several utilities feature - a DOS file copier, a program for transferring Rob C, Multiboot and other menu formats to DOS 2, and a menu system for your .COM and .BAS files.

As you will have gathered by now, every issue of Futura is positively brimming with goodies. Stuart tells me there's lots more planned for future editions - reviews of commercial and public domain software, an expanded VCS section and new original programs to name a few.



EXCEL

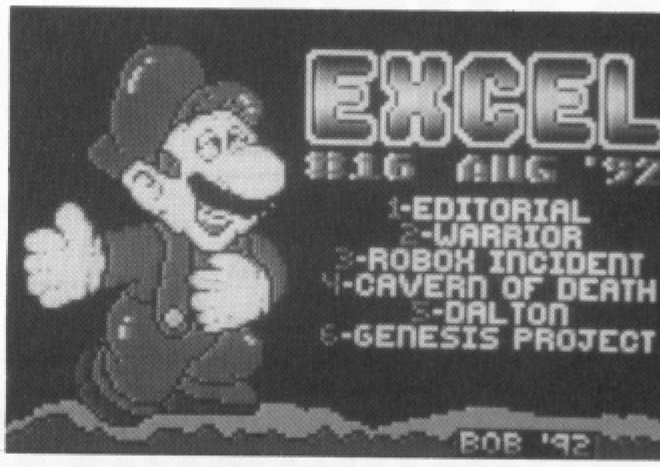
Meanwhile another Scotland-based Atarian, Robert Stuart - whose Excel disk magazine has been praised in these pages before - continues to offer his support despite an increasingly disappointing response from other users. Some may be suspicious when it seems they are getting such a lot for a small outlay but there should be no fears - there are no catches, drawbacks or side effects. It really is a good deal!

Robert is already set to release the twentieth issue of Excel before Christmas, which is quite an achievement when you consider the enormous effort that goes into its preparation. Unlike Futura, the Excel disk mag does not contain reviews or articles - text files are only used when instructions are required for complicated applications. This policy was introduced with issue 7 as Robert wanted to pack the maximum quantity of software into each issue. Unfortunately there isn't room here to mention all the recent disks but I hope a short summary of the highlights should tempt you enough to investigate further!

Boing! is a game by Neil Ottaway of Tiger Developments (check out the Tarkus review last issue) which appears on the 'B' side of Excel 10. It's a clone of 'Bounder', which has appeared on many popular micros, and runs along a vertical-scroll hopping theme in a similar manner to Gremlin's Trailblazer. The playing area is a relatively small window in the top centre of your screen and your job is to ensure a constantly bouncing ball doesn't bounce on anything nasty or run into other adversities. Boing! features some nice animation and is quite addictive - though also frustrating as it's far too easy to expire!

On the same disk you'll find BBK Artist, a drawing application with no shortage of functions. As well as the usual facilities such as draw, line, circle, box and fill there are options to add text using system or disk-loaded fonts, set reflection modes, use magnification and even demonstrate 'rainbow' graphics techniques. You can load pictures in Koala, Micropainter and Magniprint formats, though save only to Koala.

Excel 12 has, among many other things, two interesting applications to aid the design of arcade games - Colorfont Map Editor and Colorfont Screen Editor. The map editor helps you create background graphics for scrolling games. The program uses Antic mode 4 for high resolution multicoloured graphics



and can load fonts from Excel's ColorFont, which appeared in the first issue. A Basic demo is provided to show you how the finished backdrops can be incorporated into your own software. The Colorfont screen editor is similar to the map editor except that it's aimed at producing games that use page-flipping, such as Draconus or Blinky's Scary School. A textual instruction file is supplied containing help for both packages.

Label Master heads the line-up on Excel 13. This is a competently crafted utility for (as you probably guessed) creating, storing and printing address labels. It's classed as shareware and the author invites you to send off a registration fee in return for an improved version. There's just room to mention the Genesis Project Demo on Excel 16. It's a conversion of a Commodore(stop) 64 program and although it doesn't do a lot you'll definitely be impressed by the graphics!

This isn't a comparative review as I believe you should not choose between Excel and Futura - you should have them both! Although there's inevitably some overlap in material (both aim to include the best PD available) each disk mag has its own style and you are sure to find a great deal of interest in every issue.

USEFUL INFO

Futura is produced by the North of Scotland Atari User Group c/o Stuart Murray, 71 Walker Road, Torry, Aberdeen, AB1 3DC and is available in disk, cassette and printed format. The disk version can also be obtained from Page 6. Excel is produced by Robert Stuart, 21 Stronsay Way, Broomlands, Irvine, Strathclyde, KA11 1HZ. Look out for his advertisements in New Atari User.

Ian Finlayson's

TUTORIAL TIME

ITS ALL QUITE LOGICAL

INTRODUCTION

As you all know, at the very heart of your computer things are extremely simple. In fact it all boils down to zeroes and ones. At this very fundamental level the microprocessor is making simple binary additions, subtractions and comparisons. These are all binary logical operations. It is not surprising, therefore, to find that there are logical operators in the higher level languages, including BASIC, and these operators are amongst the fastest and most efficient that are available.

The very simple manual that has been supplied with the 8 bit Ataris such as the 600 and 800XL gives a list of precedence of the operators, but it does not give any indication of their use, so most people only use them in ways that have parallels with the mathematics we learn at school such as:

X=X+1 meaning let x equal one more than its old value,
or
IF X>10 THEN .... meaning do .... if X has a value of 10 or more

But there are uses for these operators that seem to defy schoolboy mathematics. What result would you expect from the following two expressions?

```
? X*(X>0)
? Y+10*(Y>50)+100*(Y>500)
```

Just remember that TRUE has a value of ONE and FALSE has a value of ZERO and then the meaning should be self explanatory. In the first expression (X>0) is TRUE (value 1) if X is positive and FALSE (value 0) if X is 0 or negative, so it results in a value X when X is positive and a value of zero if X is zero or negative. Similarly the result of the second expression is Y if Y is 50 or less, Y plus a "bonus" of 10 if Y is between 51 and 500, and Y plus 110 (that is +10 and +100) if Y is over 500.

Another fact that seems a bit odd at first is that a number is considered to be "true" if it is not zero and "false" if it is zero. This can be made use of in expressions like the following:

```
IF X THEN ?"TRUE"
```

This will write TRUE on your screen unless X is zero. It works with negative numbers and decimal parts of numbers which are considered to be "True" like positive integers.

PRACTICAL USES

By now you are probably wondering what is the use of all this, so I have written two short example programmes to illustrate uses of logical statements.

The first program is a simple number guessing game. The computer selects a number in the range 1 to 100 in line 30 and prompts for n input in line 40.

Your number is accepted in line 50, and a count of the number of attempts you make is started. For clarity and simplicity I have not put any error checking on the input, so the program can be easily confused if you do not enter a suitable number in the 1- 100 range. If youngsters are to play the game it must be crash proofed as they will soon take delight in deliberately seeing what happens if nonsensical key presses are made.

In line 60 D is put equal to the difference between your guess, Y, and the original number, NUM.

Line 80 contains the logic statement. It is a conditional GOTO depending on the value of D. If D is zero all the brackets are "False" so the GOTO is to line 130 - the correct number has been guessed. The other four conditions can be tabulated as follows:

-10<D<0 GOTO 140 (That is 130+10) Guess is a little low
D<-10 GOTO 150 (130 + 20) Guess is much too low
0<D<10 GOTO 160 (130 + 30) Guess is a little high
D>10 GOTO 170 (130 + 40) Guess is much too high

Each of the subroutines gives a clue to how good the guess was. After returning from the subroutine line 90 causes a jump to 120 unless D is zero. In the latter case line 100 asks if you wish to play again and if so loops back to 30 where the next number is generated.

Line 110 ENDs the program if you select N at the "play again?" prompt.

Line 120 prompts you to have another guess and loops back to line 50 for input.

```
EI 1 REM *******************************
IY 2 REM *        TUTORIAL TIME        *
OZ 3 REM *      GUESS THE NUMBER       *
QT 4 REM *             BY              *
WL 5 REM *        Ian Finlayson        *
AD 6 REM *-----------------------------*
OJ 7 REM * NEW ATARI USER  -  DEC 1992 *
EP 8 REM *******************************
AY 10 REM
GM 20 DIM YN$(1)
HS 30 NUM=INT(RND(0)*100+1):TRIES=0
UV 40 ? "TRY AND GUESS MY NUMBER
      (BETWEEN 1 AND 100)"
AA 50 INPUT Y:TRIES=TRIES+1
QB 60 D=NUM-Y
GD 80 GOSUB 130+10*(D<0 AND D>-10)+20*(D<
   -9)+30*(D>0 AND D<10)+40*(D>9)
GO 90 IF D THEN 120
HP 100 ? "PLAY AGAIN ? (Y/N)":INPUT YN$:I
   F YN$="Y" THEN 30
NS 110 END
QP 120 ? "TRY AGAIN":GOTO 50
ED 130 ? "CORRECT, WELL DONE":? "YOU TOOK
    ";TRIES;" ATTEMPTS":? :RETURN
PD 140 ? "A BIT TOO HIGH":RETURN
BK 150 ? "TOO HIGH":RETURN
CL 160 ? "A BIT TOO LOW ":RETURN
RY 170 ? "TOO LOW ":RETURN
```

Listing 1 - a simple guessing game

```
EI 1 REM *******************************
IY 2 REM *        TUTORIAL TIME        *
QA 3 REM *        JOYSTICK LOGIC       *
RR 4 REM *              by             *
WL 5 REM *        Ian Finlayson        *
AD 6 REM *-----------------------------*
OJ 7 REM * NEW ATARI USER  -  DEC 1992 *
EP 8 REM *******************************
NO 9 REM
LQ 10 JOYSTICK=1000:GRAPHICS 19:XMAX=39:Y
   MAX=23
YL 20 COLuR 2:PLOT X,Y:FOR DELAY=1 TO 10:
   NEXT DELAY
YA 30 COLOR 1:PLOT X,Y
UG 40 IF STRIG(0) THEN COLOR 0:PLOT X,Y
HE 50 GOSUB JOYSTICK:GOTO 20
TJ 999 REM joystick subroutine
NI 1000 J=STICK(0)
AM 1010 X=X+(J<8 AND X<XMAX)-(J>8 AND J<1
   2 AND X>0)
MV 1020 Y=Y+((J=9 OR J=5 OR J=13) AND (Y<
   YMAX))-(J/2=INT(J/2) AND Y>0)
AI 1030 RETURN
```

Listing 2 - joystick input simplified

JOYSTICK INPUT

Joystick input in Basic is often a mass of IF.. THEN.. statements, but a faster and much more compact method is to use logical operators. In the short example program the joystick can be used as a crude drawing instrument. While the joystick button is pressed it draws and when the button is released it erases. Lines 10 to 50 are the draw program and lines 1000 onwards are the joystick logic.

In the main program only one or two things need explanation. XMAX and YMAX are the maximum values that the cursor can go to during the drawing (the right hand edge and bottom of the screen). These values will need to be changed to suit the graphics mode you wish to use. The COLOR 2 and COLOR 1 commands cause the cursor to flash each time the program loops.

In line 40 "IF STRIG(0)" means "If the trigger on joystick 1 is pressed". (STRIG(0) is zero when the button is released).

The joystick logic in Lines 1010 and 1020 is fairly straightforward if you look at the figure showing the values returned in STICK(0) when joystick 1 is moved. In line 1010 X is increased by one if the joystick is to the right and the cursor is not already at the right hand edge of the screen, and decreased by one if the stick is to the left and X is not already zero (the left edge of the screen).

In line 1020 Y is increased by one if the stick is down and the cursor is not already at the bottom of the screen (YMAX), and decreased by one if the stick is up and Y is not already zero.

In all other cases X and Y don't change. You will see, if you run the program, that both X and Y can change at the same time giving diagonal movement of the cursor.

You must agree that this is a neat way of getting joystick input in BASIC. It is quite fast - in fact I had to put a small delay in line 20 to get a nice steady cursor flash, but this will probably not be needed if the subroutine is used in a more complex program with a slower main loop.

I hope you will experiment with the logical operators and find them useful in your programming.

SUPERSCRIPT

Seven years after its release, can Superscript still be considered the best word processor for the Atari Classic?

Les Ellingham looks back and brings you up to date

Back in issue 17, published in September 1985, I reviewed a brand new word processor which I stated to be "the most important piece of software to have been produced so far by a British company". Seven years on, Superscript remains one of the very best programs produced for the Atari Classic and, having disappeared for a few years, is now available once again but at a much lower price.

Most readers will not have seen Issue 17, an issue that went out of print quite quickly, so this is essentially an update of the review that appeared in that issue, as relevant today as it was then.

XL and XE ONLY

First of all you should note that Superscript is written for the 800XL and 130XE and will not work on the old 400/800 models, a point that is, perhaps, of less importance today although worth stating. The reason is that the program takes full advantage of the XL/XE facilities and offers full international characters, including that elusive £ sign on screen. In addition it is one of the few programs that take advantage of the extra 64k on the 130XE by allowing two documents to be worked on in memory at the same time.

The first thing you need to do with Superscript is to sit down and work through the tutorial which is essential if you want to use the program to the full. It is possible to compose simple documents by just following the screen prompts but ignore the manual and you will miss out on many powerful features.

So, boot up Superscript and you will be prompted to Insert an Existing Work Disk, Create a Training Disk, Create a New Work Disk or Create a Dictionary Disk. The dictionary disk is easily created, it is just copied from the back of the master disk onto a disk of your own and may as well be created at the same time as your Training disk. Select Create a Training Disk and several files which give exercises to be used with the tutorials will be copied onto your disk. The Training Disk and the normal Work Disk primarily contain a 'Defaults' file which is booted each time to set up the printer driver and certain program parameters which are completely user defined. You can set screen and text colours, margins, standard printing features, screen width or even assign special features to any key on the keyboard and boot these as standard every time you use your work disk. More of these later, for now let's go back to the tutorial.

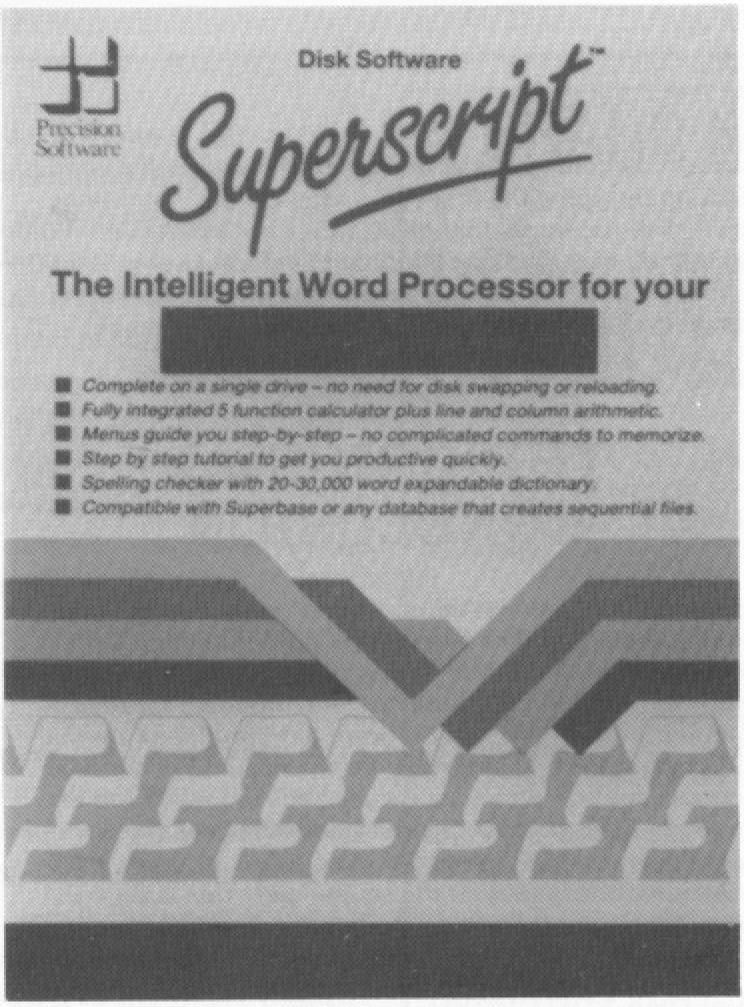
EASY LEARNING

You start the tutorial by loading in a letter to use as practice for the standard features of editing and to learn how to view and print documents which is fine for beginners and will get you used to using a word processor. Experienced users could skip this but by doing so may miss out a few tips to short cuts in using Superscript. The tutorial the goes on to 'Cut and Paste' editing which simply means moving blocks of text around from single words to whole paragraphs, before introducing one of the really powerful features of Superscript - the ability to do mathematical calculations on tables within the text.

Here also is introduced another fine feature. Atariwriter is limited to a 40 column screen and it is virtually impossible to set out any sort of table without much trial and error. Superscript allows you to define the width of the text screen to a maximum of 240 columns and will scroll across and back as you reach the screen limits. Tables could not be simpler, you just type them exactly as you want them to appear on paper.

MATHEMATICAL FEATURES

Using the mathematical features seems at first quite complex but a sample document is included and, once mastered, the technique is simple yet powerful. Each column in a table is defined as a numerical tab at the position of the decimal point, which incidentally can be set as desired, and figures are entered by tabbing across and pressing RETURN at the end of



the line. Enter as many rows as you wish and finish off with a row of dashes and you are ready to calculate totals. Simply place the cursor at the end of a line, enter a few keystrokes and the line total will be entered in the first column. Calculate each line in this way and then place the cursor at the foot of the table. A few more keystrokes and every column in the table will be totalled automatically! Any figures included in brackets or with a minus sign will be subtracted and the program has facilities for division and multiplication as well. In fact all of the commands to calculate a table can be included in a format and can be executed with just two keystrokes. There is an example included in the tutorial. Just run it and watch, you'll be amazed.

MAIL MERGE

Next comes Mail Merge which allows you to take a standard letter and 'personalise' it by automatically inserting names and addresses or other information within the standard text. An example is again provided. The procedure is somewhat lengthy but once set up is easy to use. Your letter is composed as one file and the information you wish to insert, in the example names and addresses, is composed simply as another text file. You then insert markers, which can be conditional, in your letter and start printing. This is where the 130XE is used to good advantage for you can have your letter in the upper half of memory with the merge information in the lower memory thus eliminating disk access.

The use of conditional markers makes the mail merge another powerful feature. You can, for instance, set up a file, or multiple files, containing a full list of contacts or addresses with as much detail as you wish and then print letters to them according to conditions laid down in your main letter. You could, for instance, write only to those in London or you could exclude London addresses. You could write only to female contacts or, if you keep your contact file up to date, only to people who have expressed an interest in a particular product or service. It is obviously not as powerful as a full database program but for simpler applications is more than adequate.

EDITING

The tutorials finish here but the majority of the manual is unread! There is much more that you can do with Superscript. Let's take a look now at the editing features as controlled by the keyboard. At first sight any action seems unnecessarily complex requiring the SELECT key to be pressed followed by selection of the feature required and then selection from a sub-menu. In some cases a further menu is presented. If you don't study the manual you could waste a lot of time performing almost every function but once you have executed a particular action, no matter how complex, it can be repeated by simply pressing CONTROL-R. In fact most of the commonly used editing features can be accessed by using CONTROL with an appropriate character. There are several really neat features here such as changing words between upper and lower case. CONTROL-F will change a word from upper to lower case but on first press will leave the initial letter as a capital in case it is the start of a sentence. Press again and this turns to lower case. If you prefer to use the cursor movement keys without holding CONTROL simply change them so that cursor movement is standard and the arithmetical signs are accessed with CONTROL!

USER DEFINED KEYS

What if you need to repeatedly use a series of commands? Easy, just assign these commands to any key on the keyboard in either upper or lower case. Press ESC followed by the key and the program will perform the action you have assigned. Almost anything can be assigned to a key from passages of text to single commands or series of commands. Your name and address, for instance, can be inserted in a document with two or three keystrokes. It can even be automatically centred or ranged right. Often used words can be inserted at a stroke or the cursor can be moved as desired. Several examples are given in the manual but the applications are limited only by your imagination. Suppose, for example, you often transpose two characters. Simply assign a key to reverse them, place the cursor on the first character and change them about. You can change disk drives, obtain a directory, initiate a search, exchange dates, and much more.

All this seems quite powerful, but the real beauty lies in the fact that every key stroke you define can be made permanent so that the keyboard is configured to your specification each time you boot up a work disk. If you wish you can have different configurations for different tasks and change midway through a session. You may not appreciate the power until you have used it, but what it basically means is that Superscript is not a program to which you need to adapt but a program which adapts to you. Your working version of Superscript will be exactly that, your own personalised program!

LAYOUT FEATURES

Before I go on to the search and replace functions and spelling checker, a brief word about the layout capabilities as regards the printed document. All the expected facilities such as setting margins and page lengths, centring and justifying text, including headers and footers are there as well as page numbering but a few more features are included. Margins as well as page numbers can be offset alternately so that if you are producing a bound document the wider margin will always be on the centre of the pages. To produce a double-sided document you can print odd numbered pages first, turn the paper and then print the even numbered pages. Four levels of indent can be set and released as desired allowing hanging indents, such as you see in numbered paragraphs, to be easily produced. A nice report is included on the training disk to illustrate many of these features.

SEARCH AND REPLACE

One of the useful features of any word processor is the ability to find words quickly throughout the document and replace or amend them and Superscript, naturally, has this feature. You may change all occurrences of a word or verify each change or simply find a particular word to position the cursor for editing. It was here that I found one of the few limitations of Superscript as it cannot search for spaces. I often use Atariwriter to check for and replace inadvertent double spaces in a document. A useful feature of the Search facility is to search forward or backward so you do not need to go to the start of the document for multiple searches.

THE SPELLING CHECKER

So now let's assume that you have typed your document. Before you print it you will want to make sure that the spelling is correct so a few keystrokes (or assigning these to a particular key) brings the spelling checker into action. If you have-two drives, insert the spelling checker into drive 2 and the program will look for it first in drive 1 and then drive 2. If it is not in either you will be prompted to insert it. The first action is to analyse your document. You will be told how many words have been used, how many sentences there are and how many paragraphs as well as the average word length. Then the spelling will be checked in alphabetical order throughout the document. The method is slow but it works well and and incorrect or unrecognised words will be highlighted for action as they are reached. You may either accept the word, in which case all further occurrences will be ignored, ignore the word so that it will be flagged again if found or have the program learn the word and insert it into the dictionary for future use. Words which you use often can thus be added to the dictionary automatically so that each time you use the spelling checker its vocabulary expands. If a word is incorrect you simply edit it and resume the check. When it is finished you can replace the original document on disk with one keystroke. One point to bear in mind is that, being a British program, it checks for English and not American spellings!

The spelling checker has other uses. You can use the disk as a straight dictionary. If you don't know how to spell a word just look it up by typing the first few characters and you will be shown all of the words that begin with those characters. Whilst the program cannot check grammar, you can display all of the words used with their frequency so that you can see if, for example, you have used 'nice' or 'great' too many times.

THE ORIGINAL CONCLUSION

Superscript's manual is several times the size of this magazine so you see that it is possible only to scratch the surface in a review. The program was originally written for the Commodore but the Atari version is no straight 'dump' to another computer. In fact Precision Software have produced a remarkable program tailored especially for the machine. They have discovered and used more of the facilities of the XL and XE computers than many of the well established companies in the States who have been writing Atari software for years. I will finish by repeating that for the serious user this is the most important program to appear this side of the Atlantic. It heralds the final recognition of the Atari as a serious computer, something we have known all along.

TODAY'S CONCLUSION

I can recall being absolutely knocked out by Superscript when it was released and I had the opportunity to test a beta version and make recommendations for the final release. Superscript became the word processor that was used to produce PAGE 6 (as it then was) for many years. Retyping this review, the astonishing thing is just how advanced Superscript was with almost all of the features I use today in what I consider to be the best word processor on the ST. In fact it still has one or two features that are not found in any word processor on the ST!

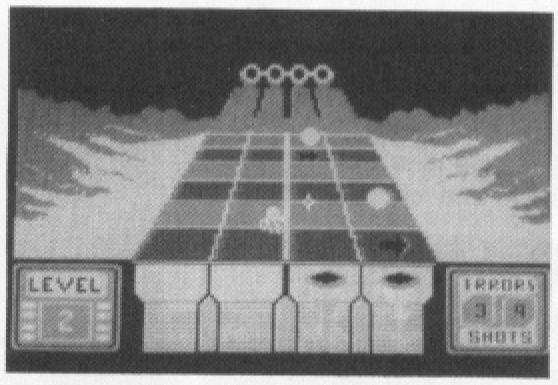
Superscript has not aged in any way, it remains the finest word processor for the Atari Classic. All that has changed is the price. At its launch in 1985 it retailed at £69.95 but today you can get a copy from Derek Fern at Micro Discount for just £10.95 inclusive of postage in the UK. That has to be the bargain of the century!

THE ACCESSORY SHOP
ISSUE 59

The Accessory Shop is a fundamental part of Page 6 providing support for the production of New Atari User magazine - without sales from the Accessory Shop it would not be possible to produce a high quality magazine for the Atari Classic. Of course the Accessory Shop also provides you with one of the few remaining sources of software and other accessories for your machine. Remember that each time you place an order with The Accessory Shop you are ensuring the continuance of the the magazine that is dedicated to the Atari Classic. Look here before you look elsewhere!

A BRAND NEW XL/XE ROM CARTRIDGE! EXCLUSIVE TO PAGE 6!

HYPNOTIC LAND



Yes, believe it or not, we have tracked down a brand new ROM CARTRIDGE for the XL/XE from Lindasoft in Italy who have produced this in conjunction with Atari Italy.

HYPNOTIC LAND is a version of the massive ST hit KLAX - a highly addictive, highly entertaining game that will challenge you to complete the first few levels and have you coming back for more - again and again!

The aim in HYPNOTIC LAND is to redirect mineral elements in the form of coloured balls into the corresponding coloured cup at the end of a ramp. To do this you must place arrows on the ramp to redirect a ball into an adjacent column. Remember to only put green balls into the green cup and so on. It seems easy but once you have mastered the first level, some despicable monsters start to appear to try and steal the balls. You can shoot them with the joystick but don't forget you also have to keep one eye on the ramp! Sometimes special shining extra-balls will appear which can go in any cup and give bonus points.

HYPNOTIC LAND requires skill, concentration and quick reflexes. Can you manage it?

Like all the great classics a simple concept that has provided the foundation for a stunning and addictive computer game

HYPNOTIC LAND is on ROM CARTRIDGE and will run on all XL/XE machines

A BRAND NEW ROM for £12.95

CABLES

Some cables are quite difficult to find but we stock most of those needed for the XL/XE or the ATARI ST. Check to see if the cable you need is here

FOR XL/XE	
XL/XE 1 METRE SERIAL CABLE	£ 8.95
850 INTERFACE TO ST	£ 8.95
XL/XE TO MONO MONITOR	£ 4.95
XL/XE TO SCART	£ 5.95
XL/XE TO COMPOSITE VIDEO	£ 3.95

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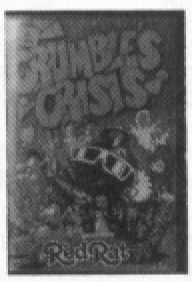
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SOLD OUT

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Regarded by some as the finest chess simulator of all. Nine levels from beginner to master. Ideal to learn with as the manual teaches all the fundamentals of the game

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CASSETTE ONLY

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A Further Selection

Here's the list of all the other items still in stock. Many of these programs will be familiar but if you want to know more check out the past couple of issues where all of these programs have been more fully described. Some real classics and some great bargains!

GAMES

MOON PATROL
Your beat: Sector Nine, home of the roughest, toughest thugs in the galaxy. Great 3D graphics and good music in this arcade conversion.

ROM *Normally £12.95* **OUR PRICE £6.95**

MISSILE COMMAND
Another of the all-time classic arcade games that has you defending cities from missile attack. For one or two players.

ROM *Normally £14.95* **OUR PRICE £5.95**

ZAXXON
One of the all time classics for the Atari, Zaxxon set new standards with its unique 3 dimensional battlefield and great graphics

DISK *Normally £9.95* **OUR PRICE £2.99**

TAIL OF BETA LYRAE
Our A-Z of Atari Software series says "The ultimate 'Scramble' clone with superb graphics and music." A great horizontal scroller

CASS **OUR PRICE JUST 99p**

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ROM *Normally £14.95* **OUR PRICE £7.95**

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Published price £5.95 **OUR PRICE £1.50**

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ROM *Normally £12.95* **OUR PRICE £6.95**

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American Football is now a big craze in this country and you can now play at home. Outsmart the defence, make tackles, select plays and more.

ROM *Normally £12.95* **OUR PRICE £6.95**

EASTERN FRONT (1941)
The classic war simulation by Chris Crawford that astounded Atari users when it was released. Based on Operation Barbarossa on the border of Russia.

ROM *Normally £12.95* **OUR PRICE £6.95**

SUPER BREAKOUT
Breakout was the original simple yet totally addictive game and this enhanced version will provide even more addictive fun. Needs paddles.

ROM *Normally £9.95* **OUR PRICE £3.95**

ONE ON ONE
Play basketball with two of America's top players in this great sports simulation which features realistic offensive and defensive moves

ROM *Normally £14.95* **OUR PRICE £6.95**

CAVERNS OF MARS
Winner of one of the first Atari programming competitions, this was one of the first vertical scrollers and remains much sought after - *LAST FEW WITHOUT BOX BUT WITH FULL ORIGINAL MANUAL -*

DISK **LOW PRICE £4.95**

KABOOM
Challenge the master bomber as he tries to bomb you out of sight. Great fun, especially for the kids who will love it

ROM *Originally £12.95* **SPECIAL PRICE £2.95**

RIVER RAID
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ROM *Originally £14.95* **SPECIAL PRICE £3.95**

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A simple yet challenging puzzle game which will get you totally addicted. In fact two games in one for double the fun

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DISK **OUR PRICE £5.95**

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Now anyone can learn to type whilst playing a challenging game. One of the original 'game based' typing tutors and a bargain priced ROM!

ROM *RRP £14.95* **SOLD OUT**

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Some programs, especially some early public domain programs won't run on the XL/XE but they will if you plug in the old version of Basic.

ROM **OUR PRICE £3.95**

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JUGGLES RAINBOW
A first computer experience for children aged 3 to 6 that teaches the concepts of above, below, left and right plus letter recognition

DISK/CASS **OUR PRICE £5.95**

JUGGLES HOUSE
Another for 3 to 6 year olds teaching the concepts of inside, outside, upper and lower with Juggles' House and Toyshelf.

CASS **OUR PRICE £5.95**

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ECT AUTUMN

Damon Haworth takes the long trek South to see how the trade view the future of the ST

Following the entertaining invasion of London with the Syke Computer people last Spring we went again to the European Computer Trade Show in September. Same business centre and same blue bit of the Monopoly board only this time we were VIP's! I rather hoped that this would mean entry to interesting seminars and much forelock touching but no. What it did mean was free coffee and biscuits at will in a special lounge.

The big news for the Atari lovers in this world was the unveiling of the Falcon accompanied by a seminar that unfortunately I missed owing to the fact it started too early for we Northerners to get to. Still the Atari stand was there and it had one on view. I walked all the way round the stand looking for this new beast and all I could see was a 1040. Then I looked again and saw the logo was in rainbow colours. This was it, the new machine! I felt it was rather cunning to disguise it from any Commodore eyes this way so I stood and watched the demo program.

The program was a picture display showing several GIF type files in good resolution but there was nothing else of note here. I went to find a representative to chat to and eventually found someone. They were very friendly and I even got coffee from them. I then discussed things Atari. Firstly I approached the Falcon vs. ST problem. The official line from Atari UK seems to be that the ST still has a long term future and that it is seen as an entry level machine for family computing. This is evidenced by their new aggressive pricing policy and bundling of the family curriculum pack. The Falcon is not an upgraded ST despite sharing the same style of box and allegedly being compatible with most ST software. The Falcon is a thirty-two bit machine with multi-tasking capabilities. It is almost capable of delivering the full PC VGA colour specification and when compared to the AMIGA 600 has much more versatility and style. The machine looks very good with quite advanced specifications, which by now all will have seen in all the press releases so I shall not bore you again with the details. Unfortunately there does not seem to be a software base of great depth for it.

To my mind this is what the ST should have been but I am not sure if it is not a little late for its Atari's salvation. On the other hand with my 1040 going on the blink again, it would not go amiss should Atari wish to prove me wrong and send me one to use for a while!

Other interesting titbits to come from the Atari stand were on the Lynx side. I had the opportunity to try the new NFL Football release and that was a sizzling good game. The colours and play designations were strong and the teams were statistically accurate. I received information on other Lynx releases imminent within the next four or five months including Eye of the Beholder. I felt that was an adventurous and brave leap for a hand held and if it is at all playable would make a Lynx well worth buying. The game is very good on a desk top machine and takes the Dungeon Master system several stages beyond the basic 3D generation we are used to. In the midst of blast 'em and splat 'em from Sega and Nintendo it seems that the Lynx has the chance to come of age next year.

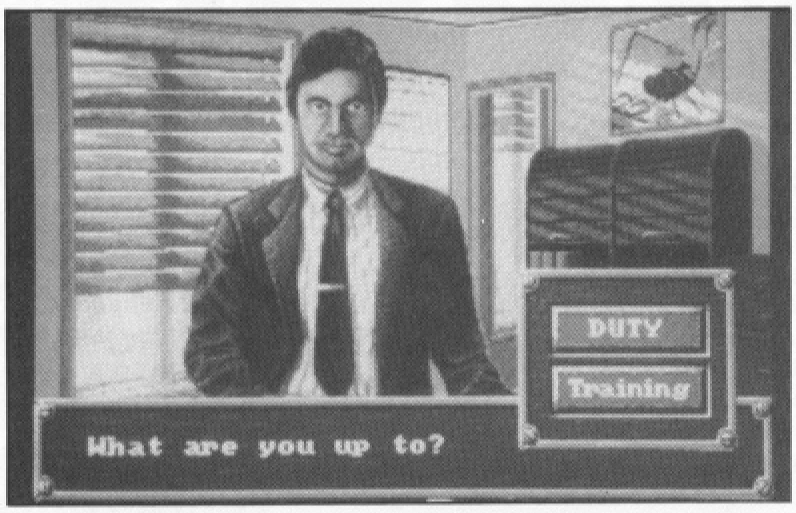
Other titbits from the computer world came from Microprose and Psygnosis. Psygnosis have unveiled Lemmings 2 which promises bigger and better sprites and a slightly different gameplay. This was to be a special display on the Tuesday of the exhibition and, sadly, owing to real work I could not stay so long. Microprose on the other hand did point out that they were 85 to 90 per cent certain to bring Civilization out on the ST. This is still only a maybe despite the fact that certain large magazines have stated it for a certainty.

The most worrying part of my discussions seemed to be a consensus with the software writers that ST support could well fail soon and that the impetus to create even conversions was falling. The other somewhat perturbing thought they were sharing was that they were not rushing to support the Falcon until its sales showed it to be worthwhile. I suggested that it needed the software support to break into the market and received nothing more than sage Catch 22 nods.

I came away from the show feeling somewhat despondent for the future of the Atari world, although the new multi media world was seen to be beckoning with loud noise and flashing lights. One final thought from Microprose and Sierra on Line was they foresaw no problems with PC support for the next eighteen months or more but both felt that Amiga support would fail sometime in the next six to twelve months.

Do not despair for hardware is becoming media lead and surely, as the Atari representatives pointed out, with nearly three quarters of a million users out there the ST will not fold overnight. Keep the flame burning and a demand going and then there will still be ST software available.

OSCAR DELTA ONE ... CLEAR FOR TAKE-OFF?



For ages now ST flight simulation fans have been treated to a seemingly unending stream of air combat simulators, all very similar except for the type of aircraft they portray. A320 Airbus from German software house Thalion breaks the pattern by providing a simulation of a civil airliner. That's right - no guns, missiles, or "bandits at ten o'clock, high!" for once. This program is all about taking off, flying from A to B, and landing safely with the MINIMUM of excitement! Sounds boring? Well, it all depends on your point of view.

When designing the program the author consulted Lufthansa (who operate A320's), Deutsche Airbus (who help build them), and Jeppesen Germany (producers of radio navigation charts for the world's airlines) to ensure the program is as realistic as possible. With all that heavyweight input you'd expect the program to be pretty good, wouldn't you? Well, you'd be right - up to a point.

UNEXPECTED SURPRISES

Airbus is beautifully packaged, and the box includes some unexpected surprise items. As well as the instruction manual and one double sided program disk you also get a large high quality colour poster showing the flight deck of a real A320 Airbus; a set of High Altitude Enroute Charts; and a set of ILS (Instrument Landing System) Approach Charts. These are genuine Jeppesen charts as used by professional pilots - how's that for realism?

The 230 page manual is generally well produced, and has a couple of tutorial sections as well as the usual nitty-gritty detail. These talk you through a basic training flight and another using the radio navigation charts and radio aids - exactly what's needed to get you quickly familiarised with the simulator's main features.

However, the manual does get a little confusing in places. It's written for the Amiga (hack, spit!) and a couple of keyboard controls are different on the ST, but you're not told this anywhere. These are for changing the preselected heading on the NAV-2 radio: <ALT-left> and <AMIGA-left> keys on the Amiga become <Clr Home> and <Insert> keys on the ST keyboard. Even worse, the ST version of Airbus is supplied on ONE disk not two as described in the manual, so don't panic about being a disk short (as I did!). You can't back up the Pilot Log disk before use as instructed as there isn't one, so back-up the program disk instead - this also holds the Pilot Log. An update sheet for the manual was included, but it didn't mention these points anywhere. Black mark, Thalion!

As with the flight combat simulators Airbus has a scenario - you're a new pilot and have to work your way up through the flight crew ranks. But here you don't get promotions by killing people - you achieve it by NOT killing them, i.e. by flying safely! If you do you'll gain promotion from Student Pilot up through Pilot, Senior Pilot, Commander, to the exalted rank of Chief Pilot. In real life it can take 18 YEARS to reach this position, but hopefully you'll do it more rapidly in this simulation!

You progress by making a number of successful Duty flights, on which your performance must satisfy certain prescribed criteria. You must land at the airport stated in your flight plan, and your touchdown on the runway must be within tight limits. Aircraft pitch, roll, heading, rate of descent, and touchdown point must all be close to optimum. Your fuel reserve must be correct too, ideally you should land with just 2500Kg remaining. This means you have to calculate your fuel requirement and usage pretty accurately when doing your flight planning.

RANDOM WEATHER

To make life harder the program sets random weather conditions on Duty flights, with worse conditions the higher your rank. Also, you have to be capable of flying using fewer autopilot functions as your rank increases, until as Chief Pilot you must be able to take off, fly, and land Airbus entirely unaided. Not easy!

Promotion is achieved by scoring at least 75% against the criteria mentioned earlier on a special Qualification flight. Once in a rank you maintain your position there by taking a Standardisation Check flight for every four Duty flights completed. The pass mark here is 66%, so you need to maintain a reasonably high standard or face demotion. Your progress is recorded on disk in the Pilot's Log for use in future sessions.

On starting the program you meet the Flight Controller, who asks you whether you're on a Training or Duty flight, the latter counting towards your career progress. You then have to file your flight plan, which involves specifying your departure and destination airports, time of departure, number of passengers and weight of freight on board, and weight of fuel to be loaded. You can also choose to fly under Visual Flight Rules (VFR) or Instrument Flight Rules (IFR), for clear or cloudy weather respectively. Choosing IFR takes you to a Weather Briefing screen, where you're told (or can set) cloud base and top heights. There's no provision for wind velocity or turbulence though, which is a pity. Then, it's out to the aircraft to begin your flight.

by John S Davison

INTO THE COCKPIT

Your view from the cockpit is the usual one - instruments in the lower part of the screen and the outside view above them. Instrumentation looks a little strange at first, but you have to remember the Airbus has many traditional aviation instruments replaced by computer displays. The ST version isn't quite the same as that shown in the manual, as a few of the features have been left out. However, everything you need is clearly displayed.

There's not much to see outside - just part of a taxi track and the runway threshold at this stage. Views through the left and right side windows (the only other viewing options) don't show much more either.

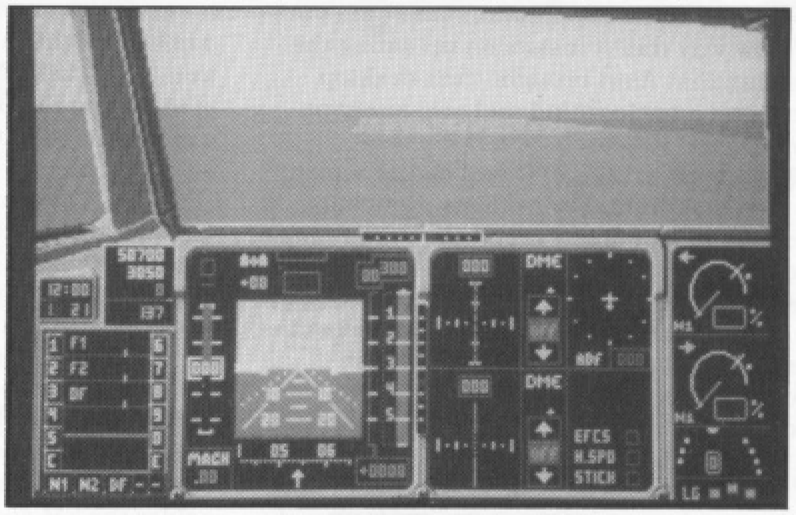
After starting the two engines, setting your radio navigation equipment for the appropriate beacons, and lowering the flaps and slats to their takeoff positions, you taxi the short distance to the runway threshold, using mouse or joystick for control. Then after locking the course into the autopilot, you wind up the engines to full power and roar down the runway.

Once off the ground you pitch up to the required climb rate, retract the landing gear, and turn on the Electronic Flight Control System. This makes sure you always stay within the Airbus's recommended flight envelope by automatically controlling pitch and engine power to prevent stalling. There's also a "Hold Speed" function, which makes the Airbus fly at a selected true airspeed by controlling engine power as required. When you reach cloudbase the outside view flickers and flashes before being blotted out by the cloud, just as in real life. Nice touch.

Scenery detail is virtually non-existent. The land is flat, broken only by rivers, lakes, and the sea, plus shaded areas used to represent towns, and the airports themselves - no roads, buildings, mountains, or anything similar appear. This makes visual navigation very difficult, so you have to rely on radio aids, which is what happens in real life anyway. You have VOR and ADF radio beacons, plus the DME and ILS aids mentioned earlier at your disposal. With these you can navigate anywhere - as long as you know how to read the Jeppesen charts provided.

NAVIGATION CHARTS

Long range navigation is handled using the Jeppesen High Altitude Enroute charts. There are four of these, covering a large chunk of Western Europe between them. At first sight they look frighteningly complex, as they show all the major air routes, radio beacons (almost 330 of these!), and radio frequencies for the given area. You use them to work out your route from departure point to destination via the radio navigation system, which takes a fair bit of practice to do successfully.



When close to your destination you need to use the Jeppesen ILS Approach charts. These show the layout and approach pattern for every airport in the simulation, of which there are about 90. Like the Enroute charts these are essentially the real thing, so you're using the tools a real pilot uses. You can manage without them though, and leave all the hard work to the autopilot.

The Airbus has an amazing autopilot system. It can automatically fly the aircraft through a complete approach and landing pattern - without the pilot touching the controls. It uses the ILS radio aid installed at all major airports - you just have to tune the Airbus's navigation radio to the correct ILS frequency and the Airbus will land itself!

Actually, it's not quite that simple. It's still possible to crash when doing a fully automatic landing if you're not careful. The manual is a little confused on the subject - I think it lost something in the translation from German - but there seems to be a "dead zone" around the airfield inside which you must not initiate the automatic landing sequence. If you start at least 8 miles out (as indicated on the Airbus's DME (Distance Measuring Equipment) radio you should be OK.

I found my long experience flying Sublogic's Flight Simulator 2 a great help in flying Airbus, particularly having read Jonathan M Stern's book "Flying On Instruments with Flight Simulator" (from Compute! Books), which explains all the concepts in great detail. They apply just as much to Airbus, so if you can handle radio navigation in FS2 you'll have no trouble here.

Airbus makes a nice change from all those flight combat simulators. However, I found it rather weak on the sound and graphics front and felt it didn't really do much that the Lear Jet option in Flight Simulator 2 can't do. True, you get the fancy autopilot approach options and the challenge of earning promotions, but I still think FS2 takes some beating in terms of facilities, realism, and particularly graphics with its wonderful 3D scenery and viewing options. If you're into simulations you'll certainly find Airbus absorbing and challenging, but seasoned FS2 users may consider it doesn't offer enough unique features to warrant buying.

A320 AIRBUS
Thalion
£39.95
Reviewed by John S Davison

THE BLITTER TRUTH

(or how to give your ST go faster stripes)

THE HISTORY BIT

You've probably come across the fact by now, that the ST's standard video chip isn't what you could describe as breath-takingly quick by any stretch of the imagination. Its frame up date and ridiculously slow way that it insists on up dating the screen is all due to the fact that Atari brought their desktop (you know the one, lime green background and awe inspiring icons) off the shelf from Digital Research.

This seemed alright but it was written in C and so the screen updates and redraws were painfully slow at times. Noticing this problem, Atari decided to install our friend the Blitter chip (Block LIne Transfer chip) to help the ailing GEM do its screen updates. What it does, in layman's terms, is takes large chunks of the screen and shifts them about as blocks instead of individual pixels as GEM normally does. This results in incredibly quick screen updates and no more of that annoying window scrolling flicker.

THE PURCHASING BIT

At the 3rd 16 bit fair at Alexander Palace I met a rather interesting fellow by the name of Bradley Koda. He runs a company called BEST electronics that have been keeping all those twiddly little bits for the Atari for the past 9 years. So good is he that even Atari come to him for spares! You can buy anything you could ever want for your favourite computer from ROM for the legendary PONG game to a contrast potentiometer for the LYNX to a complete TT 030 in bits.

I only wanted a Blitter chip after seeing how cheap he was selling them for, $40.00 (approx. £26.00). For my upgrade to the Blitter I needed a surface mounted (SM) socket to go onto my motherboard which he said he didn't have because Atari have only just started shipping motherboards with SM chips, (I bought mine back at the end of '89 and it is a Rev. D motherboard.)

There are many different types of ST motherboard, about nine at the last count, not counting STE's which has about four different types of its own. Some have PLCC connections, the ones with the pins coming down, and the others have SM connections with 64 small solder pads on the mother board.

After sending Brad a letter I received a nice fat letter about 8 days later with the schematics for a Mega 1 ST which he said had the same kind of circuit layout as mine but in a different order if that makes any sense. He told me that he had received a very limited supply of the SM sockets and had a 1040 STF label for me as well which I had ordered.

THE NERVE RACKING BIT

My friend Ben always goes white when I mention that I am thinking about doing something techie to my ST. If any of you have seen the Star Wars trilogy then you will know what damage a light sabre can do to a human being - a soldering iron is not dissimilar when used inside an Atari! The procedure of installing the Blitter chip is an easy one but one that needs a steady hand, a will of iron, a bit of know how and a hell of a lot of patience.

Bradley Koda said that the installation would be easy if I followed the schematics and traced the two soldered short out pads to the BLIT_INT connection on the 68000. This all sounds ridiculously difficult but it's not because what he is talking about are two sets of very small "D" shapes soldered together across their straight edges. Two minutes later and armed with a solder sucker borrowed from the lab technician at school I had removed both blobs of solder with the help of a soldering iron and a steady hand.

Now comes the nerve jangling bit. What I needed to do was to solder the SM socket to the top of the mother board. Sounds simple doesn't it! There's only 64 ultra small and incredibly fiddly legs to solder to equally impossibly small solder points. The legs are bent round under the socket and have to be soldered through cut out sections in its base. Well every thing went well and the socket was soldered down (albeit a tad skew whiff) and continuity checked.

Next came the insertion of the Blitter chip, carefully lined up and then pushed home with gentle shove. It didn't look right so I removed it and replaced it, only this time with a little more force. As any technician knows a good poke and a shove does wonders! The only thing left was to turn the machine on and pray.

THE RECKONING BIT

Armed with a pair of rubber gloves and welly boots I carefully turned the computer on. Well the power light came on and then the drive light. So far so good! After a few nerve jangling seconds the faithful lime green piccy popped up. Well that bit works alright! The mouse moves and then the real test, the screen update, a tentative movement into the menu bar showed the Desk menu and then File, View and finally Options. At the bottom of the Options menu below Print Screen, Set Preferences and Save Desktop is the word Blitter. Clicking on this puts a tick next to it and then you're Blitter powered. Drive boxes appear quicker the screen refresh is much cleaner

and the menu bar and drop down menus fairly sprint along. Couple this to the use of a screen accelerator and you begin to see the advantage to having a Blitter. Now that STOS has a blitter chip extension it makes a nice powerful companion to have on your side in the cold cruel world of computer programming.

Accpmpanying this article is a series of figures taken from Quick ST 3 showing the increases by the use of the machine with and without the Blitter and with and without Quick ST.

THE WARNING BIT

Everything was tickectyboo until approximately four months later when I turned the ST on after school one day and moved into the menu to do something and nothing happened apart from the title inversing. Well as you can guess a few unsightly words where said and the top came off the ST in double time. Tapping the Blitter did nothing, more swearing did nothing, Giving in did more good and ST in hand I trudged off to the local computer repair centre. There they criticised my soldering and said they could not find anything wrong (probably didn't even know what they where looking at!) but they still charged me over £16 for telling me what I already knew. So out came the soldering iron again and off came the top, out came the Blitter and in went the soldering iron and continuity tester. Thirty minutes later I had a fully working ST with Blitter chip fully operational, just shows you what can be done if you put your mind to it. What was actually wrong was that one of the contacts on the SM socket had worked loose and so the computer was hanging when data was received due to the loose contact.

A problem that has arisen twice since I've had the machine is that thin vertical black lines appear and won't go away. A helping smack on the top of the casing about where the Blitter is remedies the problem and that is the only problem that I've had with it since putting it in.

The Blitter is only supported by versions of TOS 1.2 dated 22/04/1987 or later. Anything before this will not have the code to operate the Blitter chip in it. Also check what sort of socket you need, you never know you might have a socket just begging to be filled with a fat juicy Blitter.

THE REFLECTION BIT

I hope that I haven't put you off the idea of a Blitter. If you still want to have a Blitter and don't feel brave enough to commit yourself to soldering iron then the Atari Workshop (0753) 832212 can supply and fit it for about £40 which isn't bad and they'll guarantee the work too (can't be bad!)

Any of you out there that want any more information either write to me at the address below or contact the Atari Workshop.

Nicholas Bavington
8, Byron Drive
Newport Pagnell
Bucks
MK16 8DX

SPEED COMPARISONS

1. TOS 1.2

	BLITTER ON			BLITTER OFF		
	Low	Medium	High	Low	Medium	High
TOS TEXT	115%	108%	110%	100%	100%	100%
TOS STRING	112%	108%	109%	102%	103%	103%
TOS SCROLL	129%	130%	134%	100%	100%	100%
GEM DIALOGUE	148%	129%	132%	100%	100%	100%

2. TOS 1.2 with Quick ST v3.05

	BLITTER ON			BLITTER OFF		
	Low	Medium	High	Low	Medium	High
TOS TEXT	468%	384%	353%	468%	384%	353%
TOS STRING	1941%	2115%	1433%	1941%	2115%	1433%
TOS SCROLL	134%	135%	138%	132%	132%	136%
GEM DIALOGUE	180%	302%	325%	179%	282%	293%

3. TOS 2.06 (ROM Upgrade)

	BLITTER ON			BLITTER OFF		
	Low	Medium	High	Low	Medium	High
TOS TEXT	100%	100%	99%	87%	93%	91%
TOS STRING	100%	100%	99%	91%	95%	94%
TOS SCROLL	100%	100%	100%	79%	78%	76%
GEM DIALOGUE	100%	100%	100%	66%	76%	74%

4. TOS 2.06 (ROM Upgrade) with Quick ST v3.05

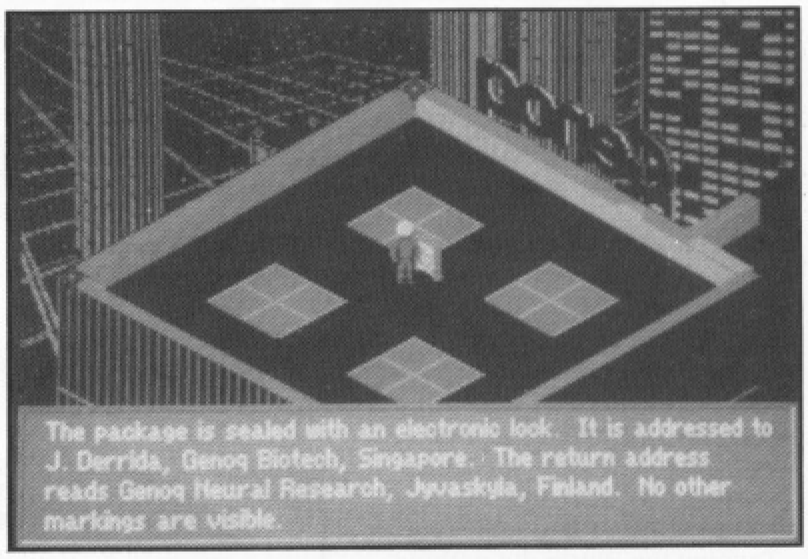
	BLITTER ON			BLITTER OFF		
	Low	Medium	High	Low	Medium	High
TOS TEXT	416%	363%	328%	416%	363%	328%
TOS STRING	1780%	2037%	1364%	1780%	2037%	1364%
TOS SCROLL	105%	105%	105%	103%	103%	103%
GEM DIALOGUE	123%	257%	271%	121%	237%	241%

D/GENERATION

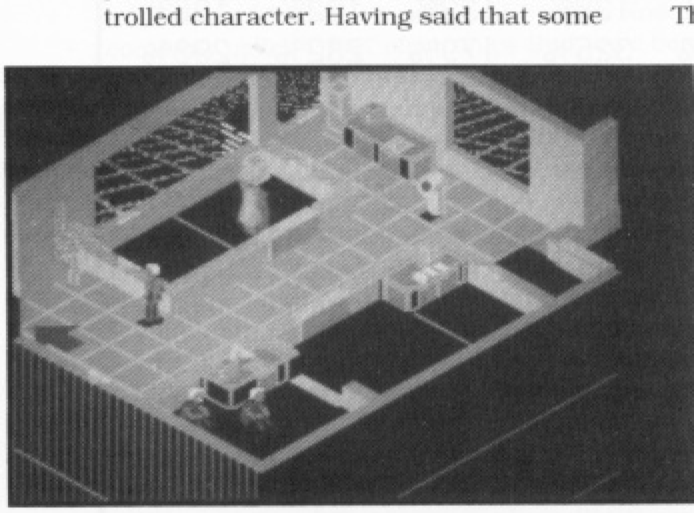
Yet another in the PC conversion set, this is an arcade adventure with many memories of Impossible Mission about it. On first opening the box the buyer would be forgiven for thinking that a deep and meaty game was awaiting them. There is a thick manual ready for digesting and only the two floppies to use. The booklet does tend to be a four language affair and as such cuts reading time down enormously. The manual takes some time explaining how to install to a PC and not until you search the box further are you presented with the ST modes. That is the whine about multiple format packaging out of the way.

The game has a simple but intriguing plot that reads like a Man from Uncle storyline. A secret laboratory in Singapore has suffered technical failure and the Neogen formulas have created a super monster that is taking over the lab and will then probably begin a world domination campaign.

The playing view is a top down 3D one that those who know the Ultima games of the early eighties will be familiar with. Admittedly the graphic style has improved greatly since those days but unfortunately my feelings toward them have deteriorated. The top down roofless room approach has always felt somewhat unwieldy to me and seems to leave a lack of precision in the movements of the controlled character. Having said that some of the most popular games of late have employed this mode so the criticism will probably disappear in a puff of blue smoke.



A joystick would seem to be the ideal way to control the game although keyboard inputs are acceptable. This control always feels slightly uncertain with some of the triggering of switches requiring quite finicky actions. Most switches are large yellow triangles which need running over to activate. Unfortunately they give no real feedback unless the switched object is in the same room as the character then the on/off effect can be observed. This seems reasonable as a precept but the switches do not seem placed in situations which offer any clue as to their function. An example of this rather unfriendly interface is seen on the very first screen where the trick is to disable security lasers with a switch on the other side of the room. Although I accept that the intention here is to allow the player to dodge the beams and practice timing moves, as an initial problem it is frustrating.



There is a limited conversational system with a menu of questions or responses to use when interrogating individuals. Unlike some other auto response games this one seems linear and answers seem to be more stylised and not terribly realistic in tone. In some ways the user interface reminded me of the worst style of Sierra games. I did enjoy meeting the Neo Gens which serve as the creatures since it finally explains where the ball thing in the Prisoner came from! The hero has several weapons to find and much shielding to hand .

Once a room has had its denizens of death destroyed the player needs to move his character over all ducts and doors to seal them and then the surviving humans will appear, to be guided out of a safe exit. It is possible to interrogate these survivors and obtain further clues as to the whereabouts of the final creature. This is the entire game and

" another adventure type game "

although the variety in bad guys adds to the novelty of situations the play becomes repetitive and the obscure joystick moves become tedious and frustrating. I found myself going to the keypads more and more in order to maintain some control over the errant hero. Somehow I just could not get into the game and did not find it gripping or, after the first couple of screens, riveting enough to wish to continue to the end.

Graphically it is reasonable although not the highest calibre the ST can manage and it has limited sonics. The game must have some redeeming features if only in the fact that it offers another adventure type game for the ST. It is noticeable that the Amstrad PC starter packs offer this as one of the free games with the system so there should be some playability here. Although a very polished product it does not seem to be one of my 'must buy' releases of the year. If the style of game interest you and you were an Impossible Mission fan then by all means look at this.

Title:	**D/GENERATION**
Publisher:	**Mindscape**
Price:	**£24.95**
Reviewer:	**Damon Howarth**

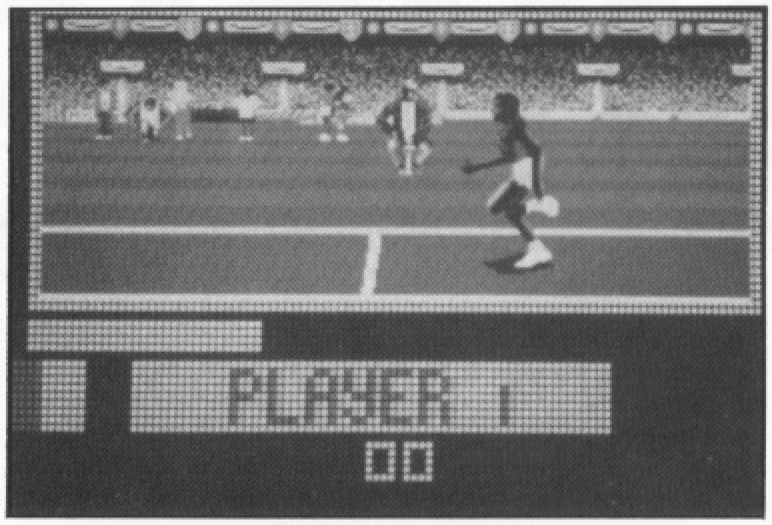
- ***SIGHT & SOUND*** *- Yes it has both but neither are up to the minute technology stretching events*
- ***GAMEPLAY*** *- Hard to come to terms with, the control mechanism needs some work*
- ***OVERALL*** *- Quirky game, not my immediate favourite, view before buying!*

THE CARL LEWIS CHALLENGE

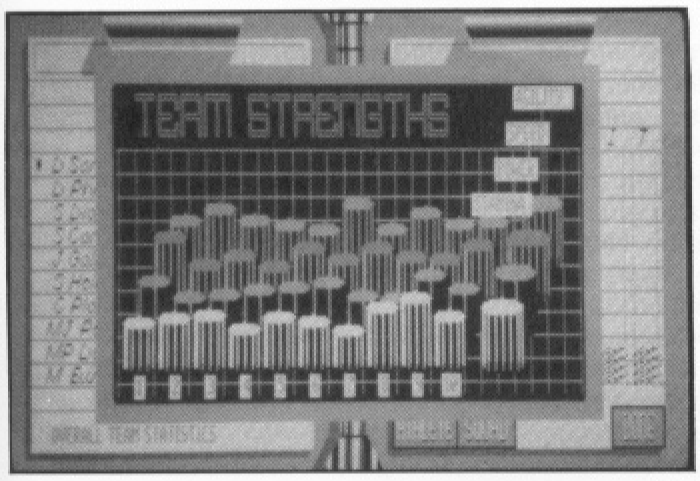
At last the game I saw previewed at the ECT Show this Spring. A Psygnosis sport management game tied in with one of the best US athletes currently winning gold. The game comes with the attractive packaging normally associated with the company and the blurb gives promise of three variants of gameplay. This game comes with the Amiga screen shots on the back and I am beginning to wonder if they ever bother to preview these games on the ST. Remember the old days when ST shots were supreme?

The game is a multi player game or a single player versus machine entertainment, the object of which is to select and train a national team and thus enable it to win more gold medals than the others in the five event championships. The pleasant and somewhat unique angle this game takes to athletics is that the whole may be played as a management game or as an arcade wigglethon or as a combination of the two. The whole concept is wrapped up in the strong Psygnosis graphics that regular players have come to expect.

Although it is possible to run in any of the three modes the full mode is probably the most satisfying and, since it involves the same actions as the sub modes, I shall run through this only. Firstly it is necessary to choose your country, achieved through a mouse controlled 'point and click on the flag' routine which can become a little confusing at times. When up to four players have been selected the training mode starts.



A short list is shown and it is up to the manager to select those members of the team that show most promise and likelihood to improve under the training schedules to be set up. The manager has five weeks to upgrade and hone the competitors and care must be used neither to under nor over train any one person. Both these mistakes result in form loss and in the case of overtraining a chance of injury. The athletes need to progress in four different areas - agility, speed, power and stamina. Obviously it is necessary to decide which events the various individuals will take part in before starting their training. Sprinters need totally different skills to high jumpers for instance. Happily the training schedules do not just ask you to select one of four attributes they actually demand that the style of training be decided. For example do you use isotonics or isometrics with your javelin thrower? Does your sprinter need acceleration training or is it better to give ballistic stretching exercises? Other questions that need answering are those such as should the training mode be a one off or a regular one? How hard should it be practised and how long per session should it be?



Help is given in the form of performance graphs for each team member and comparative stats allow the manager to judge the effects of the training. This is probably the most skilful part of the game, and in fact in the management only faction completing this session puts your athletes on an automatic competitive mode using their stats only.

The competition can be arcade based and may be stand alone (in this case the team members only have average stats thus making the player work harder). Most games are controlled in the same vein as all the other Olympic games type software, only in this there is the option to wiggle the mouse left and right rather than the joystick. The graphics and animation during these features are superb and look as though they have been developed from long studies of athletic styles. There seems to be less frantic wiggling in these games if only because there is more emphasis on the rhythmic use of the apparatus rather than the brute power seen in many comparable works. Each event needs qualification standards to be reached and then with entry into the final the possibility of a medal becomes realistic. The actual gameplay feels superior to many other games available at present.

> *" less frantic wiggling "*

Overall this game is fun although I fear it may have a limited length of appeal. Once the ultimate training schedules appear then new goals need creating. I enjoyed this game but somehow the element of true immersion in the fate of the players seemed to be missing. Perhaps the multi player version is stronger and offers a better challenge? Certainly a hit with armchair athletes but for the less enthusiastic I am not sure.

- ***GAMEPLAY*** *- Takes some getting into and then becomes a trifle repetitive*
- ***SIGHT AND SOUND*** *- The graphics are strong with good digitising early, the fx are good and opening tracks are strong*
- ***OVERALL*** *- One for the enthusiast I'm not sure if it will have mass appeal*

Title:	**THE CARL LEWIS CHALLENGE**
Publisher:	**Psygnosis**
Price:	**£25.95**
Reviewer:	**Damon Howarth**

MAKING MUSIC WITH YOUR ATARI



John S Davison's regular guide to all the ways of making music on your favourite computer

In the last issue we looked at the concept of General MIDI (GM), and I promised to get hold of some GM hardware to find out how it performs. Well, thanks to Jim Corbett of Yamaha Kemble Music I managed to borrow a Yamaha TG100 General MIDI expander module. At £349 it's classed as a budget level instrument, but as we'll see it offers a lot for the price.

The TG100's job is to produce a wide range of musical sounds and sound effects under MIDI control. It's useless on its own - you have to use it with other equipment capable of generating MIDI commands, such as a MIDI keyboard or sequencer software running on your computer. It's equipped with MIDI IN, OUT, and THRU sockets so connection to your ST or other MIDI equipment is very easy. To hear its sounds you also have to connect it to a separate amplifier and speakers (your hi-fi for instance), although you can just plug headphones into it instead if required. Unusually, it also has a stereo audio INPUT socket (complete with level control and peak indicator), so you can mix other sounds with the TG100's own sounds without using a separate mixer. Even more unusual is its ability to connect directly to the serial port on IBM PC or Apple Macintosh computers, saving users at least £60 on the cost of a separate MIDI interface.

The TG100's MIDI specification is excellent for the price. Its sounds include 128 GM presets; 64 other presets; memory for 64 user programmable sounds; and 10 drum kits, some with over 50 different percussive sounds. It's also 28 note polyphonic (plays up to 28 notes simultaneously); 16 part multi-timbral (plays up to 16 different sounds simultaneously) across 16 MIDI channels; and has a built-in digital signal processor for adding reverberation effects. Amazingly, all this is packed into a tiny case measuring just 8.6" x 7.7" x 1.6", although the power supply is separate.

ADVANCED WAVE MEMORY

An instrument such as this stands or falls on the quality of its sounds, and the TG100 scores well here. Sounds are generated using Yamaha's AWM (Advanced Wave Memory) sound sampling technology. What you hear is basically a "digital recording" of each sound, not something synthesised from more fundamental waveforms as with Yamaha's older FM (Frequency Modulation) technology.

If you read my "Sample This!" series in New Atari User last year you'll know that compromises are inevitable when sampling sounds, unless you're willing to spend serious money on the hardware. The TG100 is a budget instrument so some compromises have been necessary, but the TG100 still produces sounds of excellent subjective quality.

There are four banks of sounds, these being for GM use, Yamaha Disk Orchestra compatibility, Roland C/M compatibility, and the user programmable internal bank. The Disk Orchestra and Roland banks allow the TG100 to use sequencer files designed for Yamaha's superb Clavinova series of electric pianos, and with Roland's C/M expander units. The internal bank holds user edited versions of the preset sounds, more of which later.

The GM bank contains 128 sounds subdivided into 16 categories of 8 sounds each. The categories include Piano, Chromatic Percussion, Organ, Guitar, Bass, Strings, Ensemble, Brass, Reed, Pipe, Synth Lead, Synth Pad, Synth Effect, Ethnic, Percussive, and Sound Effects. The individual sounds are usually variations on the category, or different members of the named family of instruments. For instance the Piano category contains various acoustic and electric pianos, harpsichord, and clavinet.

I don't have the space here to comment on all the sounds, so I'll just mention some that caught my attention. The acoustic pianos are rather good, but do suffer a little from the samples being too short. This presumably is to economise on sample memory - one of the compromises I mentioned. The result is a good clean piano sound, but the notes decay and loop a little too quickly for my liking, producing an overall "tinkly" sound. This is fine for some types of music, but doesn't quite work with big sustained chords.

There's a good selection of strings, both as solo instruments (single violin, viola, cello, and bass) and en-masse (as found in the Ensemble category). The pizzicato strings sound great, but tremolo strings are disappointing, to my ears anyway, as the tremolando effect seems unrealistically slow.

OOOHS AND AAAHS

As well as massed strings the Ensemble category also includes a couple of choir samples, singing "Oooh" and "Aaah" sounds. Generally these are pretty good, but do show up

another of those compromises. A given sound is sampled at a particular pitch, and when played back at that pitch it sounds fine. Ideally you'd have a separate sample for every note on a keyboard (called multisamples), but this requires enormous amounts of sample memory and hence increases the instrument's price. The compromise is to use fewer samples and allocate each one to a SECTION of the keyboard, shifting the pitch of the basic sample to obtain higher or lower notes as required. Trouble is, when shifted the sample begins to lose its realism, getting worse the further it's shifted. So, you need the right number of multisamples to ensure each one sounds reasonable across its complete pitch range. Yamaha seemed to have slightly too few choir multisamples, as each sample sounds a little strained at its pitch extremities.

The saxophones suffered similarly, but overall produced some terrific sounds. I particularly liked the baritone sax - scope for some Gerry Mulligan impressions here! There's also a good punchy brass section sample with bags of bite, and a nice muted trumpet and French horn. I was less impressed with trombone and tuba though, and felt the flute, piccolo, and clarinet sounds weren't particularly realistic.

Most of the tuned percussion (xylophone, marimba, etc.) were very good, and I especially liked the timpani and tubular bells. The drumkits all sounded fine too, providing a wide range of good quality drum sounds, including lots of Latin and electronic percussion.

The guitars seemed a little weak when auditioned solo, but sounded subjectively better when played along with other instruments. This was particularly true of the acoustic nylon and steel stringed guitars. Basses, on the other hand, were mostly first rate. I'm sure I could easily find a use for all eight of them. There are lots more preset sounds I could comment on, but you should be getting the picture by now - the TG100 has masses of different sounds available and most of them (despite the minor criticisms above) are eminently usable.

It's possible to perform limited editing of the preset sounds via the TG100's front panel buttons. You can copy a sound into one of the internal user memory locations and change such parameters as envelope attack and release, and reverb level. Some preset sounds are actually made up of two different sample elements and for these you can tweak the parameters of the individual elements. You can change the relative sound levels, detune one against the other, and set different panning positions. This won't change the overall tonal character much, but more extensive changes can be made via MIDI using patch editing software running on your ST. At present this means using one of the (expensive) generic editors such as C-Lab's Polyframe, although cheaper TG100 dedicated editors should be available soon (PD, perhaps?).

HOW NOT TO DO IT!

The degree of success you achieve with the TG100's sounds depends on how you use them. My first attempt was a total disaster. I tried to play back a complete military band arrangement for a musical project I'm currently working on, and it sounded terrible. There were just too many different sounds fighting each other, so I concluded that this ISN'T the way to use the TG100. I started again with music for a small band, using up to about eight active musical parts. With sensible choice of sounds and pitches the TG100 now sounded terrific. Subjective quality improved further when I used its panning facility to place each instrument in its own position on the stereo soundstage.

I also tried playing music files from disk ST722 (MIDI Songs, Mixed Bag 6) from the Page 6 PD Library, and many of these sounded great via the TG100. I particularly enjoyed Beethoven's Moonlight Sonata, using the Oooh Choir singing the main melody, accompanied by a mixture of different string ensemble voices - it produced a lovely sound, the sort that makes the hairs on your neck stand on end! Finally, I tried it using Band-In-A-Box's new GM facilities (see review in Issue 57), and once I'd got the software correctly configured it worked superbly.

To really hear the TG100's full capabilities just take a listen to its built-in demo tune. This is one of the best I've ever heard - explosive, exciting music showing off all the TG100's best sounds. It even manages to work in a snatch of sampled applause and seashore sounds! Brilliant!

I really enjoyed having the TG100 in my MIDI setup, and the more I used it the more I liked it. When used sensibly it produces excellent, high quality sounds that would be welcome in any MIDI system. Beginners and experienced MIDI users alike should find something in the TG100 to impress them, so if you're looking for a new MIDI expander make sure you audition it before deciding what to buy.

MOZART'S DICE



I've now had chance to try out the Mozart's Dice disk (ST704 from the Page 6 PD Library) announced in the last issue. It contains three interesting music programs: a demo version of Hybrid Arts' EZ-Score Plus music scoring and printing program; Patterner, a music generation program; and the Dice Waltz, the subject of this report.

The Dice Waltz implements Mozart's theory that you can generate acceptable waltz music by building it up a bar at a time from musical phrases selected randomly from a prewritten list. Mozart apparently rolled dice to choose the phrases and this program simulates that. It then displays the phrases onscreen (hi-res only), optionally prints them out, and plays the whole piece. And guess what? Mozart was right, the result is a passable waltz.

The program generates two sets of eight bars, each of which is played twice resulting in a thirty two bar waltz which sounds typically Mozartian. It uses three part harmony written on two staves, and the output can be played on the ST's internal sound chip or, even better, via MIDI. When using MIDI you can load in a patch list for your synthesiser to make choice of sound easy. There are several supplied, including one for the Yamaha PSS keyboards, but you can easily make your own if required. Author Chris Earnshaw claims that Dice Waltz can generate over 350,000,000,000,000 different waltzes, and it would take over 500 million years to listen to them all!

Overall, Dice Waltz is a great little novelty program. The disk is worth buying for this alone, with the other programs an added bonus. And at £2.95 it'll hardly dent your wallet. Call Page 6 now to order your copy.

Paul Rixon's PD WORLD

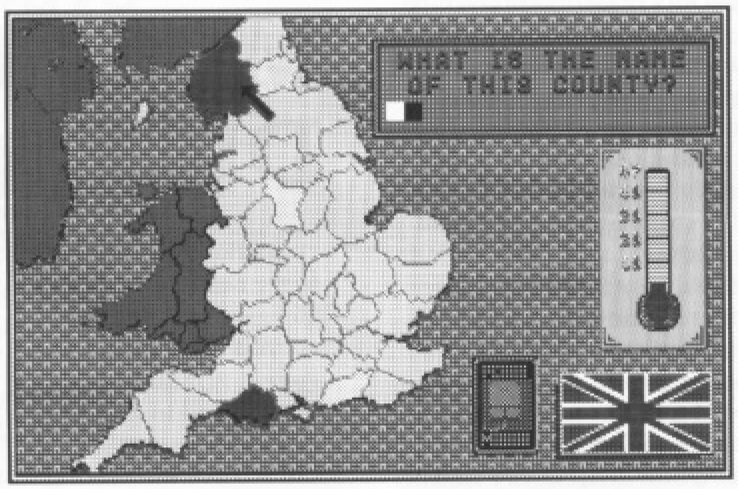
IT'S EDUCATIONAL!

It's a fact that many parents buy micros at Christmas in the belief that they are wisely investing in their children's education. It must also be true that a fair proportion of these gleaming machines are subsequently used for little more than blasting aliens into oblivion or transforming the TV into Nigel Mansell's racing car. This needn't be the case though - over the years a good selection of educational software has been produced for the ST, especially in the Public Domain. Browsing through the Page 6 library I discovered a surprisingly wide choice of learning-related programs.

MAKE IT FUN!

Education should be fun and **KID'S FUN** is a collection of educational games designed to be just that! The first few items are intended for the very young: Kid Music is a compilation of eight children's tunes such as 'I'm a little teapot' and 'row, row, row the boat'. The desired tune can be played by simply clicking on an associated icon. Kid Piano lets children play their own tunes using the mouse to click on a three octave keyboard, which can be made to sound like an organ or piano. Kid's ABC is an aid to practising the alphabet (presumably the QWERTY keyboard too!). When the user correctly enters all the letters, they are rewarded with a full rendition of 'twinkle, twinkle little star'. In Kid Potato the aim is to match the appearance of a computer generated Mr Potato by choosing the appropriate features (eyes, nose, hat etc.) from a list of alternatives. Just for fun you can also design your very own Mr Potato!

Last but most definitely not least, Kid Mix-up is an excellent learning game that children (and adults!) will find quite addictive. The computer displays parts of a story using four pictures and the user has to place these into the correct sequence. Examples are a snowman at various stages of construction and a pencil drawing gradually taking shape. The user interface is very friendly and the graphics have been thoughtfully created. An enhanced version of the program is available on a separate disk, appropriately named **KID MIX-UP PLUS**. The main improvement here is that you can add your own story sequences using any Degas compatible art program. Twenty seven ready-made stories are included.



Excellent graphics in STATES & COUNTIES

SOME GEOGRAPHY

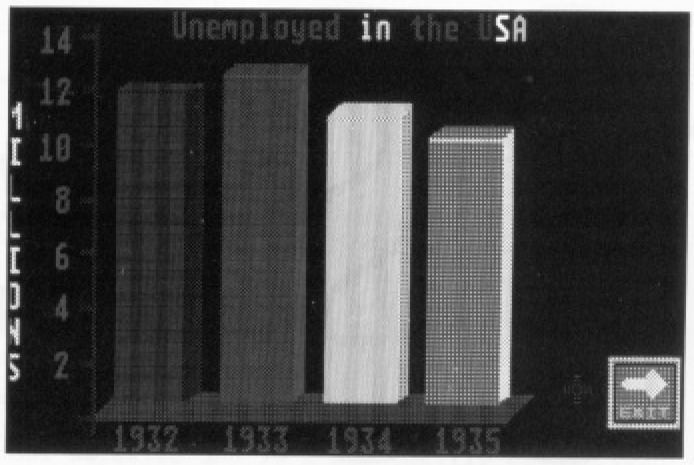
STATES & COUNTIES from Budgie Licenseware is a geographical recognition program whose main asset is the superb quality of its maps. The basic principal is very simple. The computer displays a map of a particular area and highlights a county or state which you are asked to identify by typing in the correct name. It sounds a lot easier than it actually is! After the appropriate congratulations or commiserations for each turn an information panel is optionally displayed to tell you a few facts about the area in question. There are five versions of the program covering England, Ireland, Scotland, Wales and the United States. The graphics are really excellent - as you might have expected from Budgie.

An unusual bonus on this disk is a clever game which, as well as teaching co-ordination and reading skills, could be a help with efficiency training of Post Office workers (rumour has it the Editor sent a free copy to Stafford sorting office, but it got lost in the post!). Your objective is to sort a mound of letters into alphabetically marked pigeon holes as quickly as possible. You can choose the speed at which the mail appears and whether to sort by town or addressee but in either case you must watch out for registered and airmail items which have to be stored in separate compartments. If you make more than 25 mistakes, the game ends. It's good fun for children and adults alike.

AMERICA ... AMERICA ...

On a historical note **1900's USA** is, as its title suggests, a collection of facts and figures relating to America in the early part of the twentieth century. It was written by an ex-GCSE pupil and is therefore related to the GCSE history exam, though it should also appeal to anyone with a general interest in world history. The files are supplied in compacted form and expand onto two disks, which you must format with 82 tracks/10 sectors per track. The LHArc utility is supplied so all you need to get going is two floppies and a capable disk formatter, such as DC Format. Once loaded the program options are selected from icons displayed on a work panel. There are several topics: Facts and Figures describes the states that make up the USA, population growth through the years and static information such as the area, time difference and national flag. There is a list of US presidents since 1900 and reports on the background of the First World, Second World, Korean and Vietnam Wars. Another part delves into factors such as the New Deal and the Ku Klux Klan while a series of graphs illustrate statistics such as unemployment, share prices and success rates of the political parties. Lastly there's a quiz so you can

find out how much you've learned. I suspect most GCSE students will find it infinitely more exciting than reading through dreary text books!



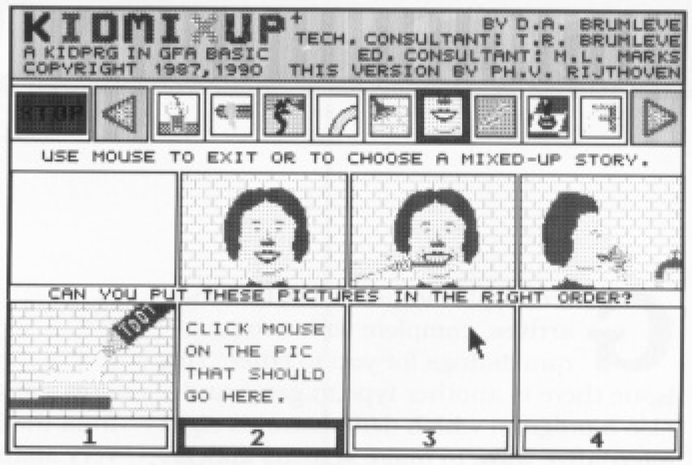
Left - Serious study with 1900's USA

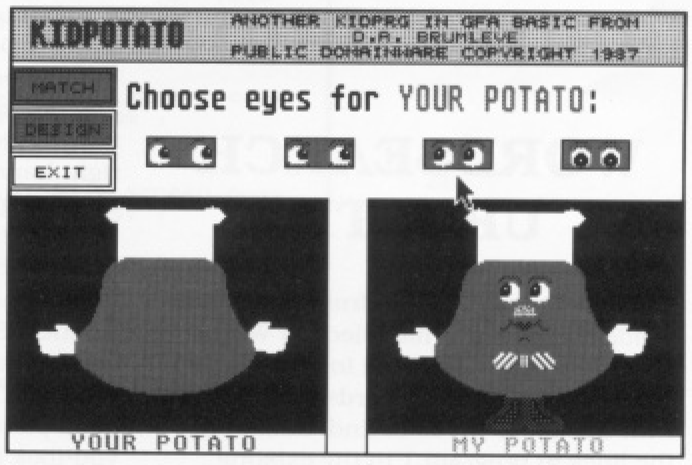
Below - Fun for the youngsters with KID MIXUP and KID POTATO

BETTER THAN SCHOOL

A variety of educational subjects feature on the **EDUCATION 1** compilation. At first sight AddUp looks like a straight game of Tetris but it's really an ingenious method of exercising your mental arithmetic. In this variation the falling blocks are regular in shape but contain three segments, each bearing a number. Your aim is to place the blocks such that three consecutive segments add up to a total of fifteen in a horizontal, vertical or diagonal line. If you succeed the segments dissolve and make room for subsequent rounds but a complication is that if the lines add up to fourteen instead, an indestructible 'X' is formed. Class 31 is a comprehensive database-cum-spreadsheet intended to be used by teachers who want to keep track of their students' progress. The author claims to have tested it with his own classes of over two hundred students. The program lets the teacher enter details and scores for each student and then calculates the class ranking, final average and letter grade. You can obtain statistics such as the frequency, mean and standard deviation or display tables and graphs of the grade distribution. Print options are also available.

Mathematics is rarely a popular subject but Math Quiz can make learning just that little bit easier. It provides an unlimited number of arithmetic exercises based on addition, subtraction, multiplication and division. You must first enter a common number which will be added, subtracted, etc. by a computer-generated number in each question. You can set the range of the random number and also specify the total number of questions. The computer keeps track of your performance and assigns a grade at the end of each exercise. The configurable nature of Math Quiz makes it a valuable tool in gradually developing children's arithmetic skills. With Master Quiz you can set up your own multiple choice quizzes, perhaps to revise important facts and figures for a forthcoming examination. An example trivia quiz is included and it's very easy to add your own questions and save them to disk for future testing. Time limits can also be imposed on playback. In ST Spell the user is asked to identify a digitised picture (an animal, shape or 'object') and then select letters from the alphabet to spell the word. A digitised voice pronounces each letter as you choose. The same voice features in Teach ABC, for younger children. In this one the computer speaks each letter of the alphabet and the child responds by pressing the corresponding keyboard letter. This may be a help in teaching the alphabet but I hope it won't encourage children to imitate the computer's pronunciation!





GOOD MOANING!

There's just room to mention **CHUNNEL**, a great game that will help you learn the French language. It's basically a multiple choice quiz in which you have to find the correct translation for a series of words in each language. You can choose to play in English-French mode or vice versa, and the computer will pick a selection from its database of over 2700 words. Even if you couldn't stand French at school you may quite enjoy this exercise and will probably be surprised how quickly you pick up the language (well I was!). A bon marche, as they say.

A FREE GIFT!

Finally, as it's Christmas I thought I would throw caution to the wind and offer a ***FREE copy of the commercial package Fun School 2 for 6-8 year olds*** to the first person who writes to me at Page 6 with a suggestion for a future PD World topic. Chances are if you write in, you'll win... Happy Christmas!

HOW TO GET THEM

The disks featured in PD World can be obtained from the PAGE 6 ST library. When referring to a specific disk please use the unique reference code for identification. A printed catalogue describing all the library disks in detail is available from PAGE 6 at a cost of £1.95, refundable against the first few disks ordered. This includes a copy of THE PAGE 6 CATALOG DISK which is otherwise priced at £1. The disks featured this issue are:

ST114 KIDS FUN 1
ST299 CHUNNEL
ST522 KID MIX-UP PLUS
ST667 STATES & COUNTIES
ST688 EDUCATION 1
ST696 1900's USA

Prices for standard disks are £2.95 each or £2.50 each for five or more but prices are lower for members of the PAGE 6 ST Club
Write to PAGE 6, P.O. Box 54, Stafford, ST16 1DR
Telephone 0785 213928 with credit card orders

THE STOS COLUMN

More STOS programs from Dion Guy

Greetings! Another STOS Column arrives, complete with two program listings for you to enter. This issue there is another type in game and also a program which demonstrates eight alternative ways to make screens appear. There is also a modification to last issues Wordsearch program which allows you to print out a wordsearch.

WORDSEARCH UPDATE

Thanks to a suggestion from reader Ian Holden, I have now modified my Wordsearch program (featured in issue 58) so that it can print out a wordsearch along with the list of words to find. Just add the lines in program 1 to the existing wordsearch listing. After you have run it, and entered the words to find into it, select the "Play Wordsearch" option. You will then be asked if you want to print out the wordsearch. Press the left mouse button to print or the right button to bypass. Make sure your printer is loaded and on line. After the wordsearch has printed out, the program will continue as normal.

PICMIX

Yes - another complete type in game from the STOS Column! This time it is a very simple but enjoyable sliding puzzle type game. After typing it in and running it, select one of the load options to load either a Degas or Neochrome picture. Then select "PLAY PICMIX" to get going. The program will segment the picture into 16 pieces and then remove the top right hand corner piece. It will then mix up the remaining 15 pieces and display the result on the screen. Your task is to unscramble the pieces and recreate the original picture. You do this using the joystick. Simply use the Up, Down, Left and Right controls to slide the pieces around. Once you have restored the original picture you will be told how long you took and then returned to the menu. You can now either load another picture or restart with the same one and try and beat your time. If you can reassemble a picture in under 30 seconds then you will have perfected it! If at any time during the game you wish to return to the menu, just press the "Q" key.

SCREEN APPEAR PROGRAM

This program shows you eight fancy ways of making screens appear. It originated from a disk fanzine called ST Programmer and I have since updated it. Once you have typed it in and run it you will see a menu. Firstly, press SPACE to load in a Degas screen. Then, using the mouse, select which one of the eight appear routines you want to see. You will then see the screen you loaded in earlier appear in a unusual way. After pressing a key, you will be returned to the menu where you can choose another appear routine to have a gawp at. You can use any of these appear routines in your programs. The routines are clearly marked with REM statements in the listing, so you can easily examine them (and copy them to your own programs). By the way, this program and all the appear routines work in all three resolutions.

THE END

Ah well, the end of another column is upon us. Don't forget, if you have any STOS type stuff you want looking over - you know where I am. Just remember to enclose an S.A.E if you want a reply, please! Until the next column - farewell!

Dion Guy
11 Shore Crescent
Bishops Waltham
Hants
SO3 1DZ

```
25 on error goto 1270
521 qwindow 0 : home : print space$(79) : home : centre "Print wordsearch?
(Left=No : Right=Yes) (Ensure printer is loaded and On Line)"
522 repeat : M=mouse key : until M<>0
523 if M=2 then goto 1210
1210 rem PRINT WORDSEARCH
1220 lprint T$ : lprint
1230 for B=1 to 20 : A$=""
1240 for A=1 to 60 : A$=A$+GRID$(A,B) : next A
1250 lprint A$;space$(4);WD$(B)
1260 next B : goto 530
1270 rem ERROR TRAPPING
1280 if errl=1220 then goto 530
1290 resume 25
```

Listing 1 - an update to last issue's Wordsearch

```
10 rem VARIABLE SETUP
20 dim GRID(3,3),CHK(15)
30 for A=0 to 15 : read B : CHK(A)=B : next A
40 data 0,1,2,3,4,5,6,7,8,9,10,11,0,12,13,14
50 GX=3 : GY=0 : reserve as screen 6
60 for A=0 to 3 : for B=0 to 3 : GRID(A,B)=17 : next B : next A
70 rem SCREEN SETUP
80 mode 0 : key off
90 palette $770,$0,$0,$0,$770,$420,$430,$450
100 windopen 1,0,0,40,12,0,3 : curs off : scroll off : paper 0 : pen 1
110 locate 0,1 : centre "LOAD DEGAS PICTURE"
120 locate 0,4 : centre "LOAD NEOCHROME PICTURE"
130 locate 0,7 : centre "PLAY PICMIX"
140 locate 0,10 : centre "(C) 1992 Dion Guy"
150 ink 1 : box 80,16 to 239,31 : box 64,64 to 255,79 : box 104,112 to 207,127
160 set zone 1,80,16 to 239,31 : set zone 2,64,64 to 255,79 : set zone 3,104,112
to 207,127
170 rem HAS AN OPTION BEEN SELECTED?
180 repeat
190 M=mouse key : Z=zone(0)
200 if M=1 and Z=1 then goto 430
210 if M=1 and Z=2 then goto 490
220 if M=1 and Z=3 and P=1 then goto 550
230 until true=false
240 rem DISPLAY AND SEGMENT PICTURE
250 cls : hide on : get palette (5)
260 screen copy 6 to physic : screen copy 6 to back
270 ink 0 : bar 240,0 to 319,49
280 for A=0 to 240 step 80 : for B=0 to 150 step 50 : box A,B to A+79,B+49 :
next B : next A
290 timer=0
300 rem MAIN LOOP
310 rem GET JOYSTICK AND KEYBOARD INPUT
320 repeat
330 if upper$(inkey$)="Q" then show on : goto 60
340 if jright and GX>0 then screen copy physic,(GX-1)*80,GY*50,(GX-
1)*80+80,GY*50+49 to physic,GX*80,GY*50 : screen copy physic to back : bar (GX-
1)*80,GY*50 to (GX-1)*80+79,GY*50+49 : dec GX : GRID(GX+1,GY)=GRID(GX,GY) :
GRID(GX,GY)=0 : wait 10
350 if jleft and GX<3 then screen copy
physic,(GX+1)*80,GY*50,(GX+1)*80+80,GY*50+49 to physic,GX*80,GY*50 : screen copy
physic to back : bar (GX+1)*80,GY*50 to (GX+1)*80+79,GY*50+49 : inc GX :
GRID(GX-1,GY)=GRID(GX,GY) : GRID(GX,GY)=0 : wait 10
360 if jup and GY<3 then screen copy
physic,GX*80,(GY+1)*50,GX*80+80,(GY+1)*50+49 to physic,GX*80,GY*50 : screen copy
physic to back : bar GX*80,(GY+1)*50 to GX*80+79,(GY+1)*50+49 : inc GY :
GRID(GX,GY-1)=GRID(GX,GY) : GRID(GX,GY)=0 : wait 10
370 if jdown and GY>0 then screen copy physic,GX*80,(GY-1)*50,GX*80+80,(GY-
1)*50+49 to physic,GX*80,GY*50 : screen copy physic to back : bar GX*80,(GY-
1)*50 to GX*80+79,(GY-1)*50+49 : dec GY : GRID(GX,GY+1)=GRID(GX,GY) :
GRID(GX,GY)=0 : wait 10
380 rem IS PICTURE UNSCRAMBLED?
390 C=0 : D=0 : for A=0 to 3 : for B=0 to 3 : if GRID(A,B)=CHK(C) then inc D
400 inc C : next B : next A
410 if D=16 then goto 640
420 until true=false
430 rem LOAD DEGAS PICTURE
440 cls : F$=file select$("*.PI1","Load Degas Picture",4)
450 if F$="" then goto 80
460 if right$(F$,3)<>"PI1" then goto 440
470 erase 5 : reserve as screen 5 : load F$,5 : P=1
480 goto 80
490 rem LOAD NEOCHROME PICTURE
500 cls : F$=file select$("*.NEO","Load Neochrome Picture",4)
510 if F$="" then goto 80
520 if right$(F$,3)<>"NEO" then goto 440
530 erase 5 : reserve as screen 5 : load F$,5 : P=1
540 goto 80
550 rem MIX UP PICTURE
560 C=0
570 for A=0 to 3 : for B=0 to 3
580 if A=3 and B=0 then goto 620
590 X=rnd(3) : Y=rnd(3)
600 if X=3 and Y=0 or GRID(X,Y)<>17 then goto 590
610 screen copy 5,A*80,B*50,A*80+80,B*50+49 to 6,X*80,Y*50 : GRID(X,Y)=C : inc C
620 next B : next A
630 goto 250
640 rem JIGSAW COMPLETE
650 cls : show on
660 palette $770,$0,$0,$0,$770,$420,$430,$450
670 windopen 1,0,0,40,12,0,3 : scroll off : curs off : paper 0 : pen 1
680 locate 0,3 : centre "Well Done - picture reassembled!"
690 locate 0,5 : centre "It took you"+str$(timer/50)+" seconds."
700 locate 0,7 : centre "Click here to" : locate 0,8 : centre "return to menu."
710 ink 1 : box 88,112 to 224,144 : set zone 1,88,112 to 224,144
720 repeat : M=mouse key : X=zone(0)
730 until X<>0 and M=1
740 goto 60
```


Listing 2

A neat sliding square puzzle for your own Degas pictures

Listing 3

Add sparkle to your programs with eight different ways to make a screen appear

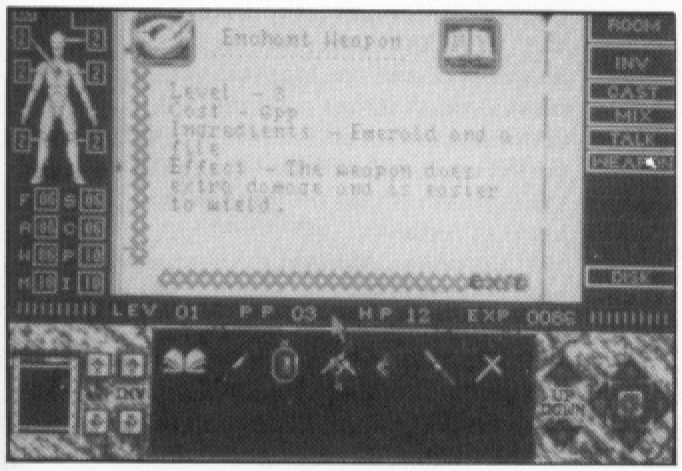
```
10 rem SCREEN APPEAR ROUTINES
20 rem Adapted from a program from ST Programmer issue 1
30 cls : key off : palette $0,$777
40 windopen 1,0,0,80/divx,12,0,3 : curs off : scroll off : limit mouse 0,32 to
(640/divx)-1,159
50 home : centre "SCREEN APPEAR MENU"
60 for A=1 to 8 : locate 0,A+1 : centre "Appear"+str$(A) : next A
70 locate 0,11 : centre "[SPACE] = Load picture" : Y2=2
80 repeat : Y=y mouse/16
90 if inkey$=" " then goto 150
100 if mouse key=1 and OK=1 then goto 200
110 until Y<>Y2
120 inverse on : locate 0,Y : centre "Appear"+str$(Y-1) : inverse off : locate
0,Y2 : centre "Appear"+str$(Y2-1) : Y2=Y
130 goto 80
140 end
150 cls : TYPE$="*.PI"+str$(mode+1)-" "
160 erase 10 : reserve as screen 10
170 FILE$=file select$(TYPE$,"Load DEGAS picture")
180 A$=mid$(right$(FILE$,3),1,2) : if A$<>"PI" then goto 10 else load FILE$,10 :
OK=1
190 goto 10
200 rem ~~~~~~~~~~~~~~~~~~~~ Main Rout. ~~~~~~~~~~~~~~~~~~~~
210 cls : hide on : get palette (10)
220 Y3=Y-1 : on Y3 gosub 260,320,420,490,550,610,650,690
230 screen copy physic to back
240 home : centre "Press any key" : clear key : wait key
250 show on : goto 10
260 rem ~~~~~~~~~~~~~~~~~~~~ Appear 1 ~~~~~~~~~~~~~~~~~~~~
270 for X=0 to 80/divx-1 : for Y=0 to X
280 screen copy 10,(X-Y)*16,Y*10,(X-Y+1)*16,(Y+1)*10 to logic,(X-Y)*16,Y*10
290 next Y : wait vbl : screen swap : next X
300 screen copy physic to back
310 return
320 rem ~~~~~~~~~~~~~~~~~~~~ Appear 2 ~~~~~~~~~~~~~~~~~~~~
330 XAXIS=80/divx-1 : YAXIS=400/divy
340 if YES=0 then dim X(XAXIS,1) : YES=1
350 for X=0 to XAXIS : X(X,0)=0 : X(X,1)=rnd(5)+2 : next X
360 COUNT=0 : for X=0 to XAXIS : Y=X(X,0)
370 screen copy 10,X*16,0,(X+1)*16,Y to logic,X*16,0
380 Y=Y+X(X,1) : X(X,0)=Y : if Y>YAXIS then inc COUNT : X(X,1)=0
390 next X : wait vbl : screen swap
400 if COUNT<XAXIS+1 then goto 360
410 return
420 rem ~~~~~~~~~~~~~~~~~~~~ Appear 3 ~~~~~~~~~~~~~~~~~~~~
430 SIZE=16 : XAXIS=(640/divx)/SIZE : YAXIS=400/divy-1
440 for Y=0 to YAXIS : for X=0 to XAXIS step 2
450 screen copy 10,X*SIZE,YAXIS-Y,(X+1)*SIZE,YAXIS to logic,X*SIZE,0
460 screen copy 10,(X+1)*SIZE,0,(X+2)*SIZE,Y to logic,(X+1)*SIZE,YAXIS-Y
470 next X : wait vbl : screen swap : next Y
480 return
490 rem ~~~~~~~~~~~~~~~~~~~~ Appear 4 ~~~~~~~~~~~~~~~~~~~~
500 XAXIS=40/divx : YAXIS=40/divy : XMID=XAXIS/2 : YMID=YAXIS/2
510 for Y=0 to XAXIS : C=Y : for X=XMID to 0 step-1
520 if C>0 then screen copy 10,X*16,(YMID-C)*10,(XAXIS-X)*16,(YMID+C)*10 to
logic,X*16,(YMID-C)*10
530 C=C-1 : next X : wait vbl : screen swap : next Y
540 return
550 rem ~~~~~~~~~~~~~~~~~~~~ Appear 5 ~~~~~~~~~~~~~~~~~~~~
560 XAXIS=640/divx : YAXIS=400/divy
570 for Y=YAXIS to 0 step-1
580 for I=0 to Y step 2 : screen copy 10,0,Y,XAXIS,Y+1 to logic,0,I : next I
590 screen copy 10,0,Y,XAXIS,Y+1 to logic,0,Y : wait vbl : screen swap : next Y
600 return
610 rem ~~~~~~~~~~~~~~~~~~~~ Appear 6 ~~~~~~~~~~~~~~~~~~~~
620 XAXIS=640/divx : YAXIS=400/divy
630 for I=0 to YAXIS-1 step 2 : screen copy 10,0,I,XAXIS,I+1 to physic,0,I :
screen copy 10,0,YAXIS-I-1,XAXIS,YAXIS-I to physic,0,YAXIS-I-1 : wait vbl : next
I
640 return
650 rem ~~~~~~~~~~~~~~~~~~~~ Appear 7 ~~~~~~~~~~~~~~~~~~~~
660 XAXIS=640/divx : YAXIS=400/divy : YMID=YAXIS/2-1
670 for I=0 to YMID : screen copy 10,0,0,XAXIS,I+1 to physic,0,YMID-I : screen
copy 10,0,YAXIS-I-1,XAXIS,YAXIS to physic,0,YMID+1 : wait vbl : next I
680 return
690 rem ~~~~~~~~~~~~~~~~~~~~ Appear 8 ~~~~~~~~~~~~~~~~~~~~
700 XAXIS=640/divx : YAXIS=400/divy : YMID=YAXIS/2-1
710 for I=0 to YMID : screen copy 10,0,YMID-I,XAXIS,YMID+1 to physic,0,0 :
screen copy 10,0,YMID+1,XAXIS,YMID+I+1 to physic,0,YAXIS-I-1 : wait vbl : next I
720 return
```

THE JAWS OF CERBERUS ELVIRA 2

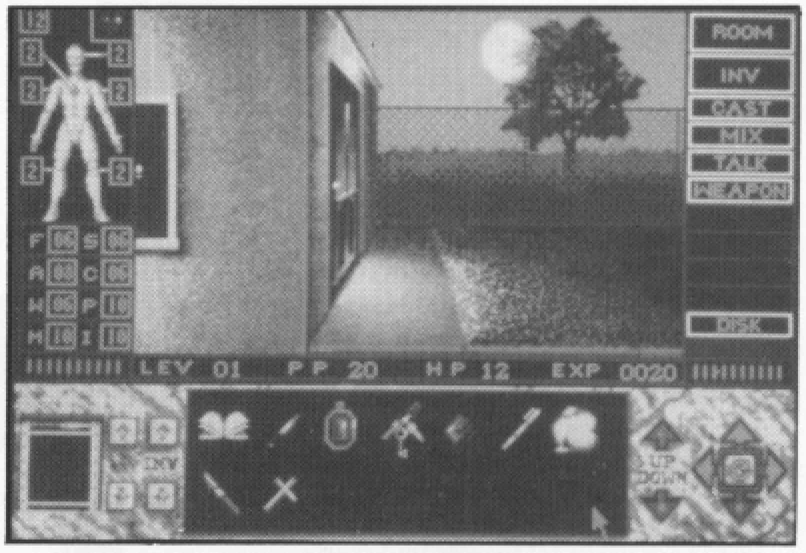
My first impressions on seeing this particular adventure was, WOW! what a lot of floppies! (7 in all). How do I fit all this in to my poor little 1040? The answer is by inserting floppies as needed at various plot breaks.

This game seems to be an example of the game designed primarliy for hard drive owners. This phenomenon has become apparent in the PC world where all machines are expected to carry a minimum 40 meg of storage space so using the best part of 7 meg to install is no problem. Sadly the majority of ST hackers do not have these luxuries, indeed when the price of a hard drive for the ST is way in excess of the price of a new machine it is hard to visualise any but hardened users having one at all.

As the title suggests this is the sequel to the highly acclaimed and innovative Elvira, Mistress of the Dark. This was a fairly blood ridden horror based adventure of much complexity and deft mouse use. The follow up certainly has more of the same and it comes in an even slicker package. Unfortunately since the game was originally crafted in the US for PC users, all the graphics are expecting a higher standard than the average ST can actually manage. Therefore the somewhat stunning displays on the box are not the quality to be seen in the game. On the other hand the effects are still strong and the graphics still maintain an atmospheric ghoulishness about them.



Title:	**THE JAWS OF CERBERUS: ELVIRA 2**
Publisher:	**Accolade**
Price:	**£29.95**
Reviewer:	**Damon Howarth**



The storyline is simple. Elvira, a real world B film celebrity of obvious note, has lent her name to this series of games to enable her fame to spread. In this particular scenario the voluptuous vamp is held prisoner by a monstrous demon in dog form. It is your role as her somewhat inept boyfriend to struggle through the blood, gore, insults and innuendo to save the lady. Indeed after the first few glimpses of the heroine's biting sarcasm and somewhat cynical put downs you may wonder why he even wants to try!

The game gives a first person perspective and sets out with a problem of gaining entry to the studio. It is possible, you just need to manipulate the objects and look at every avenue of entrance open to you. Once you have reached a new location the floppy whirs and there is a wait for the new graphics to arrive. This is the one frustrating thing about the game. The floppy accesses make the whole thing a little tedious if you are wandering around looking for new locations. Sadly owing to the size of the game this is necessary and if you manage to lose yourself in the play it is actually well worth the experience.

For those of you with younger players in the house or those of an easily shocked nature I would advise caution as the effects would rate at least 15 in a cinema and there are those who find the sight of digitised decapitations and rotting flesh distasteful. I have a mature friend who claims to have nightmares based on visions of Elvira 1 and the second version is even more graphic. We are talking the levels of Evil Dead II and Halloween here, not the soft Hammer style of Dracula.

For those of you who can cope, the soundtrack is strong and drives the atmosphere along well, there is even a degree of raunchiness offered by the digitised cleavage and Mae West like suggestions of the heroine. Oh yes beware for even Elvira the queen of horror is not immune to being plagiarised and some things are not as they seem. The game play is highly mouse oriented and occasionally things occur a little too swiftly for the user. On the up side both combat and spell casting offer newer slants and require some dexterity, thought and good instincts.

> **“ one of the best adventures to hit the ST this year ”**

I was most impressed by this game since I love bad taste and have had the pleasure of seeing some of the Elvira links to her horror shows. This is probably one of the best adventures to hit the ST this year although it is also one of the most fiddly if you do not have the option of a hard disk. It will take some time to complete this but for the more adult among us it offers a great challenge and an awful lot of fun. Buy it if you have half an excuse.

- ***SIGHT & SOUND*** *- This was developed for advanced technology and the ST revels in it, not for the squeamish!*
- ***GAMEPLAY*** *- Fiddly without a hard drive otherwise quite friendly and exciting*
- ***VERDICT*** *- Within technological limitations excellent - buy it if there are no innocents in the house*

CAT-ALOGUE of DISASTER

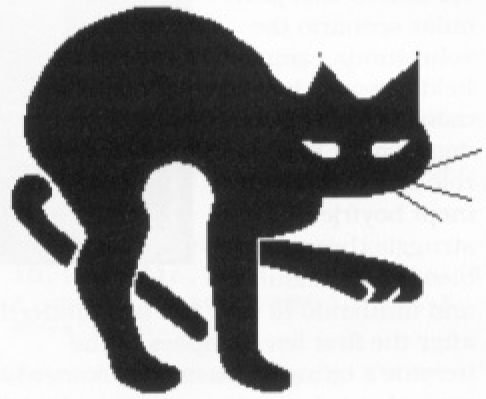
by Jet Cat

It was white even in my monochromatic vision I could see that, it stuck to the windows and then slid slowly and tantalisingly down the glass and turned to water at the bottom. I sat on the window sill watching these crystals on the other side occasionally trying to touch one although the see through barrier always got in the way.

"Sir" had gone out leaving me and the little terror at home. Quite where the provider of food had gone I don't know but she had bustled away earlier chivvying us along out of the way of the loud sucking monster they called Who-Ver. I remembered this white time from last year, they called it Christmas and everyone got into a real tizzy and that large green tree thing appeared. That was fun, it had shiny baubles on it and I could chase those. Oh sorry, I forgot to introduce myself. My name is Jet and I am the house cat at a Page 6 reviewer's house, and this is the story of how the terrible kitten Ebonaidh (or as "sir" calls her Moppitt Kitt) made an interesting discovery.

I was just curling up on top of the radiator when I heard the tell tale sound of trouble. "Miaow??". The Moppitt Kit was coming. Now as felines go she's alright, not the sleek black model that I am but the squat legged furry black ball associated with the word cute. It purrs louder than the electric mixer "Mrs. Mopp" uses and gets away with all those tricks I can't - you know, steal the chicken leg from the plate, knock the portrait photos of the chest etc. Well you know what furry kittens do. The Moppitt did her thing straight away! I counted to five and then leapt for cover as the big green and sparkly tree came falling towards me. It just missed the large moving picture box and knocked the vase of Mopp flowers over. It also hit several buttons on the gadget boxes and set the picture machine off. There was a terrible people-wauling of noises like 'God rest you merry ...' or something.

Needless to say Moppitt Kitt scarpered leaving me with several prickly green needles in my paws. I pulled myself out of the tree and surveyed the damage.



Boss would not be pleased that the hard drive he had been mending had been on the table and now lay in a pool of water from the flowers. I knew from his other thoughts and statements that this water stuff made a real mess of this electrikitty stuff and I surmised it was probably ruined. I padded after the Moppitt to see what she would say.

I tracked her to the computer room where the ST stood proud with its mouse (silly name, no squeaks and not edible) and managed a swift warning hiss just as she was shinning up the table to manage more mayhem. She jumped and fell on the switch. The whole system flickered into life launching the Snowman demo Boss had been playing with. It was then



that the blood of my forebears came to me. I was Jet Cat, child of the familiars of the Pendle Witches, maybe I had better sort out Boss's problems before he comes back. I stared at Moppitt lying in her furry heap mewing at me, stood on my back paws, and waved my forepaws towards the only humanoid object in my field of vision. Race memories filled my mind and, ears twitching, pussy power showered forth into the Monitor. A flash and a poof and all at once we were not alone. It seems that I managed to pull the Father Christmas figure out of the show. A somewhat flat but round figure looked at me with a speckly beard and said, "Well Ho! Ho! pigging Ho!"

Bravely I leapt under the bed to protect me from harm and the Moppitt purred at the thing, as is her way. The shape stroked her, revolting really. "What have you done little girl?". Moppitt miaowed and purred at him. I followed the pair downstairs as my ears heard the diesel engine of the Boss arriving.

"No problem little cat" said the shape and waved his Santa sack around. The tree stood up, the water dried out and the hard drive landed back on the table. What's more four boxes appeared under the tree. The key rattled in the back door I waved my forepaws thinking "Sleight-ime" a bad pun but quick for me! The shape went and the Moppitt and I ran to meat Boss. A stroke each and some kitty krunch made us both feel better and I curled up in front of the fire to wait for the Christmas Day feeding (always good loads of turkey!).

Oh the boxes, Moppitt got a monster box of Kitty chocs and a collar with a bow, Mrs. Mopp found a set of easy Klene Who-Ver bags. Boss was most excited since he had some sort of bird computer in the box, a Falcon I think he called it, and me? Well I got a large bag of Rabbitt crunchies with a free spell book inside.

I hope your Christmas goes well and, remember cats and computers do go together well!

Jet Cat lives with one of our regular reviewers. Can you guess which one?

WHERE CAN I FIND ....

The Atari 8-bit computers are, without question, the finest home computers ever designed and can still hold their own against any home computer. More powerful than any 8-bit and much easier to access than any 16-bit, it is a great pity that software and hardware support is dwindling. You can still find support for your machine, though, and this directory should get you on the right track. It is by no means comprehensive and we would be happy to receive details of any other companies, anywhere in the world that still support Atari.

We cannot guarantee what response you might get if you write to any of these companies, but give it a try, they need your support as much as you need theirs. Stick a couple of International reply coupons in an envelope and, if you don't get a reply, the most you lose is a few bob. But if you do get a response, it could open up a whole new world and add years to the useful life of your Atari. Don't forget to keep us informed if you find good support for your Atari Cassic.

Software Infinity
642 East Waring Avenue
State College, PA 16801
Good PD selection. Have just begun marketing commercial games from overseas

DataQue Software
PO Box 134
Ontario, OH 44862
Turbo-816 16-bit upgrade board, TransKey hardware for using IBM keyboards on the 8-bit, and other hardware

B&C ComputerVisions
2730 Scott Boulevard
Santa Clara, CA 95050
Tel. (408) 986 9960
Huge selection of software and hardware items. Also some new commercial games, unavailable elsewhere

Sagamore Software
2104 Arapahoe Dr
Lafayette, IN 47905
Good PD/shareware selection with extensive documentation

Change In Heat
12 Bella Vista Place
Iowa City, Iowa 52245
Independent programmer has produced 2 excellent commercial quality games for the 8-bit

Bresnik Software
555 Ware Street
Mansfield, MA 02048
Another independent, producing good educational software

UltraBasic
10 East 10th Street
Bloomsburg, PA 17815
8-bit speciality software

NERDS Software
18 Wendy Drive
Farmingville, NY 11738
Printshop related software

IB Computers
9244 S.W. Beaverton-Hills Hwy
Valley Plaza Shopping Center
Beaverton, Oregon 97005
(503)297-8425

BellCom
PO Box 1043
Peterborough, Ontario, Canada K9J7A5
The largest PD/shareware selection

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PO Box 5160
San Luis Obispo, CA 93403-5160
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Kearney, NE 68847
Closeouts & Printshop graphics

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Cannock, Staffordshire
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England
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Bethesda, MD 20814
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Vincentown, NJ 08088
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Bacmun Software
1671 East 16th Street, Suite 629
Brooklyn, NY 11229
PD theme disks

Alpha Systems
1012 Skyland Drive
Macedonia, OH 44056
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San Leandro, CA 94579
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Large selection of commercial software at closeout prices, and hardware replacement parts

Best Electronics
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San Jose, CA 95126
(408) 243-6950
Known as *the* Atari hardware store. If they don't have the part you need, nobody does

BRE Software
352 West Bedford Ave, Suite 104
Fresno, CA 93711
PD/Shareware

C&T ComputerActive
PO Box 893
Clinton, OK 73601

MWPDS
890 North Huntington St.
Medina OH 44256

Phantoms Atari 8-bit
Box 331 Levisa Road
MouthCard, KY 41548

Vulcan Software
PO Box 692
Manassas VA 22111-0692

Newell Industries
P.O. Box 253
Wylit, TX 75098
Tel. (214) 442 6612

Innovative Concepts
31172 Shawn Drive
Warren, MI 48093
(313) 293-0730
Accessories, hardware, PD software

CSS
PO Box 17660
Rochester NY 14617
(716) 429 5639
Speciality hardware items, 8-bit repair service

San Jose Computers
640 Blossom Hill Road
San Jose, CA 95123
(408) 995 5080
New and reconditioned hardware and software

Entertainment Excellence
1805 Princeton Place
Merrick, NY 11566
Discontinued 8-bit software

East Hartford Computer
202 Robert Street
East Hartford, CT 06108
Discontinued software for all computers

Aerion Software
PO Box 1222
Riverdale Station, NY, NY 10471-1222
Markets a new 8-bit commercial game

Toad Computers
556 Baltimore Annapolis Blvd
Severna Park, Maryland 21146
(301) 544-6943
Now offers a selection of software and reconditioned hardware

Stourbridge User Group
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Stourbridge
West Midlands DY8 4LA
England
(0384) 379575
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Gralin International
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Dorset, BH12 2BN
Hardware and software, including ICD products

Micro Discount (Derek Fern)
265 Chester Road
Streetly, West Midlands
(021) 353 5730
Large selection of commercial software, also hardware and replacement parts

Tiger Developments
26 Menziers Avenue
Walmer, Deal
Kent
CT14 7QZ
Commercial 8-bit software

Next, is a list of magazines still supporting the 8-bit Atari.

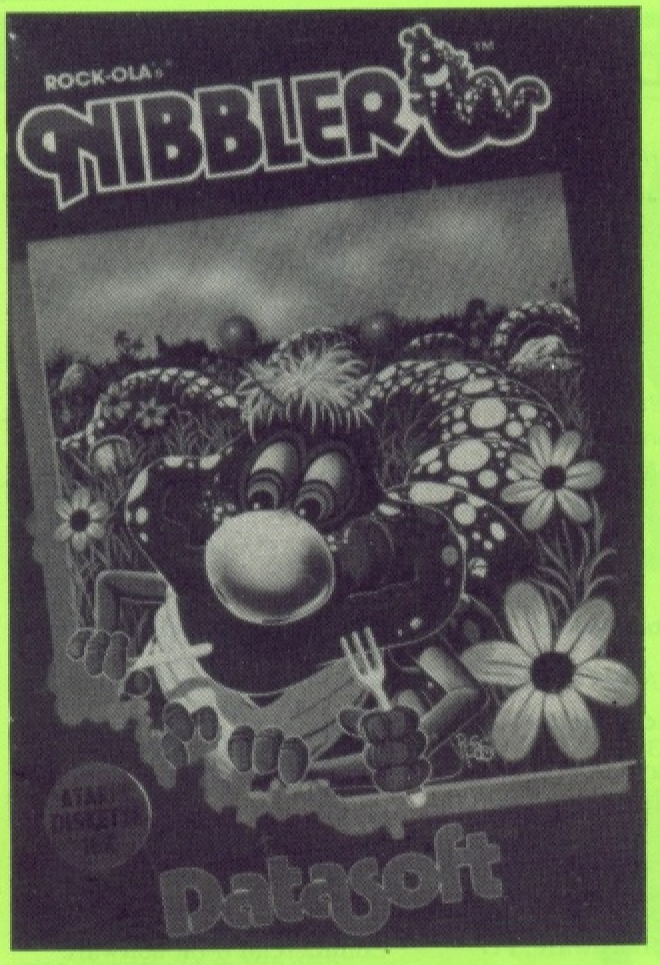
Current Notes
122 North Johnson Road
Sterling, VA 22170
A truly excellent Atari-oriented magazine, supporting both 8-bit and ST

Atari Interface
3487 Braeburn Circle
Ann Arbor, MI 48108
(313) 973-8825
A magazine supporting both 8-bit and ST, with input from Atari User Groups in the US, Canada and the UK. They also produce a monthly Atari 8-bit disk

New Atari User (PAGE 6)
P.O. Box 54
Stafford, ST16 1DR
England
0785 213928
A professionally produced magazine supporting both 8-bit and ST, also large PD library for both machines and commercial software

EXCEL (Robert Stuart)
21 Stronsay Way
Broomlands
Irvine, Strathclyde
KA11 1HZ
Scotland
Disk based magazine and commercial software

This list was originally published by the US disk magazine AIM in July 1991 and updated by Stourbridge User Group whose address you will find included above. Many thanks to them and to all who are still supporting the 8-bit. Long may it continue!
Please keep us informed if you know of any amendments.



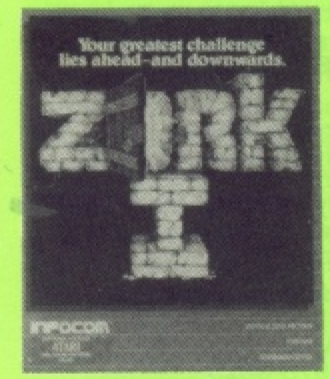
FREE

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***NOTE the game is on disk only and will only be sent to those who specifically request a copy with their order*

FULL DETAILS OF THE OFFERS AVAILABLE FROM THE ACCESSORY SHOP AND AN ORDER FORM ARE INCLUDED WITH EVERY ISSUE



ZORK I — DISK ONLY

The Infocom classic and the adventure game that changed the way all future adventures were written. The Great Underground Empire of Zork is well documented by now and thousands of players have become addicts graduating to Infocom's more difficult adventures. Zork I is the ideal introductory level adventure for beginners or those with a little experience. If you have never ventured underground before now is the time to try, it's never been cheaper to expand your universe! Classic original Infocom packaging with excellent manual and a map.

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This best-selling, all out battle adventure from Activision will have your palms sweating as you fly up river bombing enemy bridges, avoiding lethal choppers and hot air balloons. Can you survive far enough up river to discover its secret? Few can. Now this 1 or 2 player game can be yours at the lowest ever price. Bombs away!

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OUR PRICE £3.95

SUPER SPECIALS

MAXWELLS DEMON

Check out the review in Issue 49. Paul Rixon found this simple game to be quite addictive and at this price can you afford not to become addicted! It's a different type of game, more in the Tetris mould than an arcade game. It sure makes you think and the price won't break you if you don't get fully hooked.

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One of the all time classics for the Atari, Zaxxon set new standards when first issued and was copied many times. Pilot your craft across the unique 3 dimensional battlefield shooting enemy fuel tanks, anti-aircraft tanks and missiles before launching off through space for the ultimate conflict with a mighty robot - few have got this far! Zaxxon, often copied, never bettered and NEVER at this incredibly low price!

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